

MINNESOTA MEDICINE

*Journal of the Minnesota State Medical Association, Southern Minnesota Medical Association,
Northern Minnesota Medical Association, Minnesota Academy of Medicine, and
Minneapolis Surgical Society*

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Minnesota Medicine

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Volume 36

January, 1953

Number 1

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Minnesota Medicine

Journal of the Minnesota State Medical Association, Southern Minnesota Medical Association, Northern Minnesota Medical Association, Minnesota Academy of Medicine and Minneapolis Surgical Society

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THE MEDICAL SCHOOL IN RELATION TO MEDICAL PRACTICE IN THE STATE

CHARLES G. SHEPPARD, M.D.

Hutchinson, Minnesota

THE invitation to speak to you on this occasion was most unexpected and deeply appreciated. It never occurred to me at any time since I left this medical school seventeen years ago that I should ever return to speak to any of you who were my own professors in medical education. I feel very humble because of it.

However, over the past several years, during which time it has been my privilege to serve as an officer of the Minnesota State Medical Association, I have been cognizant of the fact that there has been a certain schism between the practicing physician, be he a specialist or general practitioner, and the medical school staff and faculty. The impression has deepened that something must be done to close this breach, and it seems that this which I say today should be but the first of many similar efforts by others interested in the problems to accomplish that purpose. I believe that the differences of opinion exist because of a lack of complete understanding of mutual problems.

In beginning this discussion it might be well to review for you briefly the organized medical activities as they exist outside of the University Hospitals. Some of you know this already and others may not. There are 3,896 licensed physicians in Minnesota. An additional 2,000 are licensed in Minnesota, but do not live in the state. Of the physicians residing in Minnesota 3,713 are engaged in active practice and over 3,000 of these belong to organized medicine, that is, are members of their County Medical Society and hence the MSMA and AMA. The basic unit of the MSMA

is the County Medical Society. There are thirty-two of these in Minnesota, ranging from small single county societies with membership of as few as seventeen to larger single county or multi-county societies, the largest of which is the Hennepin County society. Each medical society is autonomous, except that its efforts must be within the Code of Ethics of the MSMA and AMA and its Constitution and Bylaws must parallel those of the state and national organizations.

Activities on a statewide basis are conducted by representatives of each county society who are elected as delegates to the House of Delegates, one for each fifty or fewer members of each of the component societies. There are seventy-seven delegates and seventy-seven alternates elected to the House each year. The House of Delegates in turn elects its own officers who are the President of MSMA, First and Second Vice Presidents, Secretary, Treasurer, Speaker, and Vice Speaker. The House of Delegates meets annually or on special occasions, as required, to transact the business of the organization, accept or reject reports of the numerous committees and make whatever recommendations it wishes to be carried out.

Also there are nine councilor districts into which the state is divided, and each councilor district nominates its own councilor to the House of Delegates who then, when elected, serves as the Councilor of the MSMA to conduct the affairs of the association between sessions of the House. This council meets each quarter and sometimes oftener and considers any situations which arise on which it feels it can pass without consulting the House of Delegates. It is then, in effect, the interim governing body of the association, and has its own chairman, executive secretary and le-

Read at the Staff Meeting of the University of Minnesota Hospitals, October 31, 1951. The address appeared in *The Bulletin* of the University of Minnesota Hospitals and Minnesota Medical Foundation, 24:115 (Oct. 31) 1952.

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gal counsel. There are committees of the Council itself as well as about fifty Committees for the Association as a whole, who deal with all phases of medical economics and practice. These committees report annually to this House of Delegates, or in the interim to the Council. The Council makes major decisions of policy, and also makes recommendations to the House of Delegates which may be accepted or rejected.

Now the attitude of the overwhelming majority of doctors in the practice of medicine in Minnesota is in favor of private enterprise, and this in turn is reflected in these decisions in the House of Delegates. To witness this let me call your attention to the recent request by the House of Delegates for an evaluation of your cancer detection center. It was felt that certain members of your group had been using this center to further their own private practices, and it was resented and questioned. I haven't seen the report from the committee that was appointed to evaluate the center, if there has been one written, but I have read Dr. Diehl's statement of policy which came out recently, which I favor highly, and if carried out by your people here should prevent any further such criticism along this line.

The majority of doctors in Minnesota are engaged in general practice. In 1943, for instance, there were 1,800 of them as compared to 958 specialists. There has been considerable criticism of the attitude of certain people on your staff and faculty by those engaged in general practice because of the belittling attitude some of them have taken toward those in general practice. I have been told by some of the students that there was much discouragement for them to enter into general practice with the advice that they had much better go into one of the specialties. This attitude I deplore, first because I am a general practitioner, and secondly, because I firmly believe that a well trained general practitioner is capable of caring for 80 to 85 per cent of all illnesses, but must have the specialist's help for the solution to the other 15 to 20 per cent of the problems which confront him.

Fortunately there has been somewhat of a change in attitude in more recent years, so that more of the graduates coming out today are willing to go into general practice than was true 5 to 8 years ago when about 85 per cent of them were going into specialties. I will grant that medicine is becoming more and more complex, and because

of this more and more specialties are developing. There is still, however, the fundamental art of the practice of medicine which must not be lost in the maze of complicated laboratory procedures and which can be taught to any alert medical student. Perhaps this art of the practice of medicine is being neglected somewhat here in the medical school. I have sensed that at least some of the recent medical students felt that their own undergraduate training was being neglected here because of your extensive graduate training program, so I submit to you that your primary function should be always the instruction of the undergraduate with secondary emphasis on your graduate program. You should, in my humble opinion, gear yourselves to turn out more, not fewer, men who are properly prepared and conditioned to go into general practice, and encourage that idea with all the means at your disposal.

Teach your staff a little more of the ethics of medical practice, as they should carry it on when they are finished so that the role or opinion of the referring doctor is not belittled to the patient who comes back home at times feeling that he is being cared for by a dud or numbskull. These derogatory remarks about previous treatment accorded a patient sent to the University Hospitals have occurred too many times and should be discouraged. I realize that this same practice is followed by men in private practice as well, and I don't condone it there any more than here. But those of us who are in general practice like to feel that we are rendering a real service to our patients and not just acting as first-aid boys to the specialists, whether here or outside the University staff or faculty.

There are many specialists who are engaged in private practice outside of the regular staff and faculty of the University. I believe that some departments within the University Medical School are not making as much use of these men as they should. I believe that your visiting staff should be utilized to as great an extent as possible to give as wide a variety of views on any subject under discussion as possible. In medicine there are usually several ways of accomplishing good results in any given patient. It is these different approaches to the solution of any patient's problem which should be brought out, rather than the teaching of one view only, as might be the case if a visiting staff member's advice and consultation are not sought. There may even be times when the

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visiting staff opinion is superior to that of the men on the full time University staff.

Here at the University Hospitals, where you have every aid to diagnosis at hand, the temptation is to utilize all these aids as much as possible. I believe there is a tendency to forget that all these things are not going to be available at a moment's notice to the man going out to practice among the people of rural America. That is why I would have you teach him how he can best make some of the more common diagnoses with a minimum rather than a maximum of laboratory aids; how he can use his eyes, ears, head, and hands to the greatest advantage. In other words, I would have you emphasize more the art of practice, as I have said earlier. I do not mean by this statement to de-emphasize the role of the laboratory, because certainly we could not get along without it.

I believe, too, that it would be advisable for the heads of departments, as well as those on your faculty of lesser rank to attend these rural seminars as frequently as possible. By doing so they can see the existing facilities with which medicine is practiced outside of the medical school and can meet the practitioners of the state, talk with them, and understand their problems better. I think your understanding of our problems, and, in turn, our understanding of yours would be increased tremendously. We might even give you some ideas for research problems which would be more practically profitable than some of those now engaged in. At the same time we certainly don't want to discourage any real basic research.

All along the line in medical school education, both graduate and undergraduate, the role of the doctor in his community should be emphasized. Because the physician entering into private practice in a community is at least as well educated, if not better educated than most others in his community, it behooves him to be of as great service as possible, even beyond his contribution to his community's health. The old time doctor was placed on a pedestal by his community, and if he behaved himself, was kept there, aloof to public activities. That day has gone, and he must enter into general community life as much as his time will allow, and many times at some considerable personal sacrifice. He has an excellent opportunity to assist in the fight against "creeping socialism," and should so do.

From what I have seen and heard, there is too much advocacy of a socialized system from some

elements within the faculty itself, and most of this stems from the fact that many who so believe have never been in private practice, or who have made failures of their efforts at it, and so turn to maligning it in favor of the completely salaried practice of medicine for all. I am convinced that the great majority of your staff and faculty believe in private enterprise, but even one or two in a group as large as yours, if they speak loudly enough, can leave the impression with those outside that the majority is favoring a socialized regime. At least the seed of doubt is planted, and this is not desirable. I believe that as new members are added to your faculty, you should take in those who have had a successful private practice or at least become thoroughly acquainted with their philosophy of practice and exempt those who favor the socialistic setup. More of the graduates come out now with the idea that socialization of medicine and eventually of all walks of life is inevitable. These words have been put in their mouths by the subtle attitude of the socializer, who is patient, bides his time, and advances his position little by little as is witnessed by the changes in our own life in the past twenty years. All of Norman Thomas' Socialist platform of 1936 is now public law, due in part to our acceptance of the slogan "It's inevitable, so why fight it?"

The fight against socialism should be the fiercest fight in the medical school, as we are the first, or among the first, that the government planners would bring to heel. There are many problems as far as medical care costs that have not been solved, but given time and applied energy to the problems, they are and will be solved without excessive government intervention.

Now to another phase of undergraduate training which I think has been neglected. I believe it would be possible, probably in the premedical school course somewhere, to require a short course in business, especially as it is related to medicine with emphasis on methods of bookkeeping, medical records, et cetera, as well as a short course in legal medicine. There is no time for these subjects in the medical school, although there may be some time available during the senior year for discussion on fees in general.

Another suggestion which would be of inestimable value to the applicant for our medical school would be to acknowledge the names of the candidates who are acceptable sometime between December and April preceding the fall of admission.

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There has been considerable criticism of waiting until the last minute to announce the names of these men, at times severely handicapping that individual who may have his application in here and desires to go here above all other places, but who, to play it safe, has his application in at other medical schools in the country.

The subject of training of auxiliary medical personnel has been a sore point for many years in Minnesota. I refer in particular to the nurses training program, as laid down by the Nurses Training school and the American Nurses Association, in which people in our own state play important roles. I realize that this is a very tender subject, but that only increases its importance in solution. The nurse shortage has not been solved. I have had the privilege of sitting in on the discussion of the MSMA Committee on Nursing, but have not had the opportunity of hearing the other side of the picture. From what I can determine, this committee is completely frustrated in its efforts to establish nurses training centers in small hospitals throughout the state, and unfortunately I am not familiar enough with all of their proposals to discuss the entire program as intelligently as I should. I do know, however, that an apparent stalemate has been reached between the two groups.

As I understand the situation, the doctors in some of our small communities feel that they and their nursing staffs are quite capable of teaching a girl the fundamentals of bedside care of patients in homes or hospitals, while those in charge of setting up nurses training programs are keeping the standards of such instruction unnecessarily high, and are thus blocking the efforts of the doctors to train more badly needed nurses. Now there must be a solution to this problem. The doctors on the State Association committee have worked long and hard in an effort to solve these problems, but have arrived nowhere. When the subject is mentioned to them now, many of them become positively apoplectic during the ensuing discussion. With all due respect to them and their long hours and days of effort to solve this problem, it might be better if a new group would tackle the problem. Heretofore no one has had the courage to ask them to relinquish their committee appointment and let a new group be appointed in an effort to relieve the obstruction. I do not for one minute believe it is all the doctors' fault, however, and would suggest that perhaps it

is time for the nurses to reassess their position with the object in view of doing the greatest good for the community, even at some sacrifice of position or standard.

Don't misunderstand me. I appreciate fully the hard battle which the nurse has made to attain her present position, but I don't like to see her become only a supervisor of others' duties when her primary function is patient care. It may well be that small hospitals are not staffed nor could afford to be staffed to produce R.N.'s, but more help for bedside care must be obtained in some way, and it is up to the nurses to lead the way, rather than to be obstructionistic in their attitude. I'm probably pulling my own house and the nurses home down on my head, but I am impelled to speak frankly on this subject. Perhaps the University Nursing School should concentrate on producing teachers of nurses who would in turn be qualified to go out and supervise nurses training schools throughout the state to try to meet the need. There are, I am sure, a great many facets of this problem which I have not even touched, but I believe a start should be made to rectify existing conditions.

The other medical auxiliary groups which are in short supply are laboratory and x-ray technicians. The teaching is such at most schools here in Minnesota that a girl gets either laboratory training or x-ray training, but not both. Most small hospitals or doctors' offices cannot afford to hire two girls, one to do nothing but laboratory work and the other to do nothing but x-ray work. The two must be combined, and if possible in a shorter course than is now available. To become a registered technician now requires four to five years, I believe, including two years of academic training, which could possibly be eliminated in order to save time and expense of training and thus increase the supply of available people.

Many small hospitals find it impossible to obtain registered technicians because of the great demand, and hence have to rely upon graduates of so-called commercial schools of medical technology, who are not really thoroughly trained in laboratory and x-ray procedures. If the girl is intelligent, she can complete her training under the physician's guidance to a certain degree, but this is not the best way by all means. Some way must be found to increase the supply of competent technicians, either by establishing another shorter course here at the University or its affiliated hospitals, such

as Ancker, General, or Miller, or by working out some arrangement with these commercial schools, so that their girls receive more adequate training. You can't afford to be stuffy about them, and not recognize and offer to assist them, since we in rural areas have to accept them whether we like it or not. Actually we find most of them quite satisfactory for many procedures. By having more and better training schools, and encouraging these graduates to go into rural communities, the practice of medicine in rural Minnesota could be improved.

The same thing might be said of nurse anesthetists, although here, I realize, a more thorough fundamental training in some aspects of medicine is really necessary. We have a most conscientious nurse-anesthetist in our hospital and are able to do many more operative procedures at home than we could previously.

A source of great irritation to the practicing physician who refers patients to the University hospital for care has been the great delay in getting out reports to him about the patient who has been discharged. This has improved some in the past year but still needs to be worked on a great deal. Such prompt reporting of diagnosis, treatment advised, et cetera, is absolutely essential to the family physician who must carry on after such patient's discharge, and will improve the University staff relationship with private practitioners immensely, as well as the family doctor's and University staff relationship with the patient, and both are of equal importance.

In my opinion, and it is shared by many others I know, the doctors of Minnesota are negligent in their financial support of the medical school. There is at hand an ideal medium for such support, the Minnesota Medical Foundation, and I would encourage all Minnesota Physicians, whether graduates of Minnesota or not is immaterial, to join and support this organization.

More scholarships are needed, and the doctors, through their medical societies and as individuals could supply all that are needed if they would. If we don't do it, the government will step in and do it for us, and we'll have no say in the matter. Research grants should be made available through the estates of deceased physicians, wherever possible, to help carry on essential work.

Almost every county society in the state carries out immunization programs in the public and parochial schools, with small fees attached to en-

courage preventive medicine. We in McLeod County have pooled these immunization fees into the Society's treasury and have found this to provide almost all of the money we ever need. Others could do the same if they wished, and some of this money could be used for scholarship purposes, and would certainly be a most excellent public relations maneuver.

I'm sure Dean Diehl would be very much surprised and probably even a little disappointed, if I didn't mention a favorite subject, that of preceptorship for medical students. I became interested in this subject at the time when such a high percentage of the graduating classes were going into specialties, and realized that if this trend continued we would soon have a plethora of men in the specialties. Hence, over the past three or four years I have discussed this idea with many of my colleagues throughout the state with the result that several resolutions have been passed by the House of Delegates of the State Medical Association encouraging the idea and requesting the University to look into the matter and bring about its accomplishment. My feelings about preceptorships were further strengthened after I had the privilege of discussing medical organizations with the senior medical students last spring.

I requested one of last year's seniors to give me his own criticisms of the curriculum as he experienced it. I should like to quote a part of his letter for what it might be worth.

"All in all I think that we got a pretty good all round training especially so since I have been able to compare it with some of the other training evident on our internship. I do believe that most of us sincerely regretted that our university does not have a preceptorship included in the curriculum of its medical school. Again comparing notes with the boys from Wisconsin I feel that we missed a valuable form of training for general practice. I personally feel that general practice is the only form of medicine that holds any great deal of interest for me, but I would certainly have welcomed a chance to see it in action.

"Of course I felt that there was too much stress on the unusual of medicine and not enough on the everyday problems which I would assume that one meets in a general field. While training is confined to a university hospital I do not exactly see how this can be overcome. It is entirely possible, too, that I will be glad in a few years that I trained in an institution where the stress was so

placed since the rest may come easier than I now anticipate.

"There was absolutely no training in the realm of starting and handling a business. We did have some courses which were almost entirely superfluous and could easily be forgotten. I am sure that personnel is available that could enlighten us in such matters. Were I to start a practice on my own I would have almost no idea as to what equipment would be essential, what my fees should be, and other problems the answers to which might not make me a better physician, but might have a bearing on how soon I get a crippling ulcer.

"I do not feel that the criticism that we are taught to be too dependent on laboratory procedures in making a diagnosis is a very valid criticism. Only by actually seeing what certain physical signs mean in blood, urine, and chemical changes will such signs be fixed in our memory.

"These are only criticisms of the university in relation to our training for general practice, which is what I understood you to want. There are of course certain individuals on the staff who have a tendency to thumb their nose at anyone in general practice but I believe that on the whole the staff was very good in praising the general practitioner and the results which they so frequently attained under adverse conditions."

It was very encouraging to me to learn first of all that so many of the group with whom I visited intended to go into general practice, and secondly that they felt they would have been very much interested in taking a preceptorship had the opportunity been presented to them.

At this same time I was rather disturbed because of the fact that there were so many of them who felt that they were willing to go into general practice but did not wish to get out of larger urban centers. They felt that by going to Podunk Center, perhaps without a hospital, or even with a small one available within a few miles, that they would be greatly impaired in their practices, put at such a disadvantage that they did not wish to try it.

I don't know what has happened to the pioneering spirit which prompted our forefathers to settle in rural areas, where they had nothing to work with but their senses and a few meager drugs, but something of this kind must again be regained by the young man coming out into the country today.

Preceptorship, in my humble opinion, would af-

ford those in rural practices, or even in general urban practice, to further sell the idea to these young men, so that they could go into rural areas with a great deal more confidence and willingness, after having been exposed to the practice for a period of time. They would find that perhaps they could practice medicine without all the trimmings which are sometimes desirable, but not always necessary. They would find also that where conditions did not come up to the standards which they desired to practice under, they would have the pleasure and joy of bringing them up by their own efforts, with the help of their communities.

I believe that the patient coming to the University Hospital as a part pay or county patient should receive the same consideration as any patient in a private hospital. This should certainly include a great deal of care in the ordering of x-ray and other laboratory procedures, with the idea of trimming costs whenever possible. I am sure you will agree that some of these are expensive and perhaps not altogether necessary, even if interesting. Over the last few years we have found that the boards of county commissioners are more and more willing to have us keep our county patients in local hospitals, rather than send them here, because of the increasing costs. We can keep them in most rural hospitals for far less than it costs here, and the patients themselves would rather remain nearer home.

Could we be of help to you people by sending in certain types of cases for teaching purposes? Could you send out periodic bulletins to all the state physicians with requests for certain categories of cases you would like to have sent in? We don't have any idea what your problems are. We certainly should know them, in order to be of assistance to you.

We who are out in private practice realize that you people probably have gripes about us too, and we would encourage you to be equally frank. I am convinced that by having a committee appointed from the medical school faculty and University hospital staff and a similar group from the State Medical Association, these and other problems could be worked out to the best advantage of all. Perhaps several joint committees would be necessary, one to deal with legislative matters, one with doctor-nurse-lab technicians and other auxiliary aid problems, et cetera. But let us sit down and really try to solve these problems and quit sniping at each other from across the fence.

THE CHANGING TREATMENT OF PULMONARY TUBERCULOSIS

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THE TREATMENT of pulmonary tuberculosis has, over the centuries, undergone many changes and additions with the changing times. The introduction of the sanatorium treatment with prolonged rest, hygienic care and graduated exercise was a distinct advance and restored many individuals to health, particularly those with less extensive disease and without serious complications, especially large cavities. Those individuals unfortunate enough to have more extensive disease or serious complications occasionally recovered completely, but more often improved considerably and then reached a plateau beyond which they could not go without additional help.

The addition of collapse therapy measures offered renewed hope to many of the above patients. Artificial pneumothorax by Forlanini in 1882, phrenic nerve surgery by Stuert in 1911, thoracoplasty by deC'ernville in 1885, Brauer and Friedrich in 1907, and Sauerbruch in 1909, intrapleural pneumonolysis by Jacobaeus in 1913, and extrapleural pneumonolysis by Tuffier in 1910, each adding its bit to improve the over-all picture. Thousands of patients recovered and were rehabilitated by the use of these additional weapons.

There were, however, many gaps to be filled. Tuberculosis itself frequently did not respond sufficiently to render the patient suitable for any of the collapse therapy procedures. Then, too, there was the ever-present danger of a flare-up or spread of tuberculosis following any surgical procedure, even some of rather minor nature. Wound infections and poor healing with sinus or fistula formation were to be expected if infected areas were entered. There were, likewise, shortcomings and complications of the various types of collapse therapy which had to be considered and reckoned with in the over-all picture of treatment. The frequency of clear pleural effusions and a 10 per cent chance of tuberculous empyema were expected complications of artificial pneumothorax, while a bound down lung and impaired lung function were frequent sequelae to its use and detracted from its over-all value. The complications of infection, migration, extrusion

and expectoration of the various filling materials used in extrapleural pneumonolysis greatly diminished the value of this procedure. The unnecessary or unavoidable removal or impairment of lung function by the apparently simple procedure of phrenic nerve interruption not infrequently proved more of a handicap than a blessing to the patient so treated.

The occurrence of inadequate collapse, unclosed or reopened cavity, angulation and obstruction of partially stenosed bronchi and the persistence of symptoms from bronchiectasis detracted seriously from the over-all good picture resulting from thoracoplasty treatment. The unavoidable necessity of sacrificing good lung tissue in order to control a cavity, likewise proved a handicap to the patient. The complications encountered and a vivid memory of past tragedies tempered the surgeon's desire to perform more heroic procedures. Other types of thoracic surgery were developing rapidly with improvement in technique, in anesthesia, in blood replacement and in chemotherapy, but the treatment of tuberculosis seemed to have reached a standstill.

Then came the era of chemotherapy, and after it, that of the antibiotics. First, the sulfa drugs and later penicillin and others to control secondary infection and reduce the complications attendant thereon. Following this, the sulfones appeared, promin, promizole and diazone, with mild anti-tuberculosis activity *in vitro* and in experimental animals to raise the hope of the tuberculous patient who has ever been ready to grasp at straws and to accept, without hesitation, any new drug which might offer any hope of cure of his disease. The hope was short-lived, however, for it was soon found that their toxic effects, particularly upon the blood, outweighed their real therapeutic effect. Then the antibiotic streptomycin appeared with its remarkable effects on mycobacterium tuberculosis in culture and in animal experiments. It was used intensively and in large doses with good effect until its toxic effects on the vestibular portion of the eighth nerve were recognized and the efficacy and reduced toxicity of smaller doses discovered. Then, dihydrostreptomycin appeared as an apparent im-

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provement until its toxic effect on the auditory portion of the eighth nerve became evident. In spite of these complications, marked improvement followed its use, with almost miraculous results.

The periods of treatment had been short and intensive, but soon recurrences of trouble began to appear. It was soon discovered that the mycobacterium tuberculosis was developing resistance against streptomycin, so additional chemicals were tried. Tbio (TB I) was welcomed and then PAS (para-amino salicylic acid). These compounds, especially the latter, were an aid in the control of tuberculosis. Though less spectacular than streptomycin, they were tolerated fairly well by the patient. They were, however, far from the final answer. Many organisms also became resistant to their action, and then it was discovered that two of the substances used together had a better effect than either one alone. What was more important was that when streptomycin and PAS were used together, they could be used in smaller dosage, could be continued over much longer periods of time, and that the emergence of resistant strains of bacteria was, likewise, greatly delayed. To add to the favorable picture, another simple compound, isonicotinic acid hydrazide (INH) appeared as a cheap and readily available material with strong anti-tuberculous properties. It was not a cure in spite of all of its favorable publicity, but was another distinct help although the organisms soon developed resistance against it. Also, it was a distinct boon to those patients who already carried streptomycin resistant organisms. It soon became evident that it, too, must be used in combination with PAS or streptomycin, or both, if delay in emergence of resistance was to be effected. Under combined therapy, many patients with very extensive tuberculosis who otherwise would never have become suitable for any type of surgery can now be successfully treated, and many of the complications previously encountered and justly feared have now been reduced to the point where they may be accepted as calculated risks.

The present treatment of tuberculosis consists of a program of bed rest plus chemotherapy planned to extend over a period of months giving streptomycin, one gram every third day, and para-amino salicylic acid, 12 grams daily, supplemented with growing infrequency by pneumoperitoneum or temporary phrenic nerve interruption. This is continued until maximum im-

provement has been reached with clearing of most or all of the reversible components of the disease. Surgery to eliminate cavity, inspissated cavity, caseous residues or bronchiectatic areas is then added in the hope that the patient may be able to control the smaller residues left behind and still be protected against future recurrences which so commonly come from the larger residual lesions. With the surgery completed, the patient is again returned to the sanatorium regime for a period of prolonged chemotherapy, the length of this course to be determined by his individual resistance, the extent and type of any residual tuberculosis, and his further response to therapy, as well as to the results of bacteriological studies. It must be clearly understood that no surgical procedure can remove all tuberculosis from a patient's body. Unless the patient possesses or develops resistance against the organisms with or without the help of chemotherapy, he will never be free from the danger of further trouble. Chemotherapy, under this program, has opened wide the field for more extensive and yet more conservative surgical treatment of pulmonary tuberculosis and its complications.

The thought of removal of tuberculosis, or a tuberculous focus, is not a new one. The Shakespearean "Out damned spot" of Lady Macbeth spoken in another vein might well apply to this disease. Surgeons have been doing this at a price in other portions of the body for years; the tuberculous kidney, tuberculous epididymis, tuberculous appendix and Fallopian tube, were successfully treated by surgical removal, but not always without complications. The idea of applying such procedures to the lung were anything but new. Theodore Tuffier, in 1891, successfully carried out a resection of a tuberculous nodule from the upper lobe. Just how the lesion was diagnosed still remains a mystery for Roentgen did not discover x-ray until 1895. Subsequent attempts were not so successful.

It is not surprising, with the increasing use of resectional therapy for other types of lung disease, that, occasionally, tuberculous lesions were inadvertently resected, at times successfully, but not infrequently with unwelcome complications or poor results as illustrated by the lantern slides of a pneumonectomy patient from 1937. Others later, some of them done intentionally for known tuberculosis disease, were more fortunate as illustrated by the slides of another patient operated

upon in the fall of 1940, before the advent of any chemotherapy or antibiotics, who is now alive and well some twelve years following her total pneumonectomy for tuberculosis. Failures and complications, however, were sufficiently frequent to prevent anyone in good conscience from recommending such procedures except under quite unusual circumstances.

With the advent of antibiotics and chemotherapeutic measures, which hold tuberculosis under control for a time at least, this whole picture has changed. The doors have been opened wide and definitive treatment of localized tuberculous disease or its complications is a standard part of our modern treatment of tuberculous disease of the lung. The earlier attempts were directed, naturally, at removal of disease previously treated by pneumothorax or thoracoplasty, or both, without a complete result in a patient accustomed to collapse, usually with one good lung and in good general condition except for the handicapping residue of tuberculosis. When it became evident that such lesions could be successfully treated without a prohibitive mortality or morbidity, attention was naturally directed to less extensive disease involving one lobe and as experience increased and courage and confidence developed, to segments of one lobe, isolated cavities or their caseous residues and even to smaller nodular residues of disease or bronchiectatic areas resulting from it. These are now done even in patients who are negative repeatedly upon sputum or gastric cultures for acid fast bacilli because we well realize that such reports occur commonly in patients under intensive chemotherapy. A patient may then be treated by a pneumonectomy, lobectomy, segmental or multiple segmental resection or wedge excision of a localized area or cavity. Our object, as always, is to remove, if possible, the most significant disease or its residues conserving all normal lung, if possible, so as to handicap the individual to the least possible degree. The localized resections are far more desirable functionally than many of the former collapse therapy measures because they conserve normal breathing space to a greater degree.

One of the fundamentals in this treatment and one of the safety factors for all this work lies in prompt obliteration of the pleural space about the resected area which calls for continuous removal of fluid and exudate and immediate and continued expansion of adjacent lung tissue. If it becomes

evident that there will be free space left, a tailoring thoracoplasty to bring about its obliteration must be done at once if the situation has not been anticipated previously, and thoracoplasty carried out before the resection is done. Complications such as bronchial leakage, bronchial fistula, localized empyema pockets, and infected wounds do occur but they are, fortunately, not frequent and a number of them may be successfully treated. The incidence of tuberculous complications is much higher in the patients whose organisms are already resistant to the drugs used. For these patients, the administration of a new drug to which the organisms are not resistant will obviate the complications. Preliminary drug treatment to submerge the activity of the tubercle bacilli and to bring about as much healing of bronchial or pulmonary disease as possible before undertaking surgery is probably a most important factor in the avoidance of complications. The continuation of treatment following surgery for a long period of time adds much to the patient's chances of remaining well.

Under this program, it is now possible to attack bilateral disease, removing a segment or a cavity from one side and, subsequently, a segment or a lobe, or even an entire lung from the opposite side, if the patient's vital capacity and lung function will permit. Diabetic patients are all too prone to develop tuberculous disease of an extensive and bizarre type but have responded well to the above program. Likewise, also, Indians, Mexicans, Negroes, and other groups so frequently seen with extensive cavitating tuberculosis have responded favorably to this program. Even children with progressive primary or secondary tuberculosis with extensive cavitation, previously difficult or impossible to treat satisfactorily, can now be successfully treated and given a favorable outlook by local or extensive resectional therapy. This is well illustrated by the slide of an eight-year-old Indian girl from whom a large caseous tuberculous abscess was removed, and a slide of a four-year-old Indian boy subjected to total left pneumonectomy for a caseous pneumonic tuberculosis involving the whole left lung with huge cavitation, who is now in good condition a year and half following the operation.

The complications of previous disease or its treatment can, likewise, be relieved or reversed by direct surgical attack giving back to the patient

function of lung tissue previously lost. A relatively normal lung trapped by the fibrin and fibrous deposits on its visceral surface following a hydrothorax or a pneumothorax of long duration may, at times, be successfully returned to improved function but probably not to its original state by the operation of decortication, peeling away the thickened layers which trapped the lung, and permitting it to expand to the chest wall. Simultaneous removal of the parietal deposits must also be done. A lung trapped by a chronic pyopneumothorax or a lung previously badly diseased by tuberculosis is a different problem again for, although at times it may be decorticated and expanded to fill the pleural space, its function already damaged by loss of capillary bed or by interstitial fibrosis, does not improve to a corresponding degree and it becomes a space-filling rather than a breathing organ. The diaphragm, its function impaired by previous temporary interruption of the phrenic nerve, or stretching by extensive pneumoperitoneum, can never be returned to its original state. While it may move, it will probably never regain its former efficiency, therefore, words of caution must be exercised in the use of these apparently simple procedures.

A good knowledge of respiratory physiology and an estimation and evaluation of lung function become of increasing importance in this field. Clinical judgment and evaluation of all available information is necessary for proper appraisal in many of these patients before subjecting them to surgical procedures. It is well to remember that the complete picture is oftentimes not expressed by laboratory units alone. To carry out an extensive surgical procedure upon a patient, leaving him a respiratory cripple, is not conferring a favor upon him because he may be better off with his disease and able to breathe and carry on than without his disease and with no exercise capacity.

Definitive surgical procedures, particularly resections of one type or another, have almost totally replaced the use of the indirect surgical procedures in vogue only a few years ago. Is it proper that this should have occurred? Thousands of patients recovered under pneumothorax and thoracoplasty therapy. Can the present procedures do as well or better? Time only will tell. There is an old axiom in treating tuberculosis that we must not evaluate our results in short periods of time as such evaluations are like-

ly to be erroneous. The period over which the more recent types of therapy have been used is yet short, under two to three years. One can only say that the procedures appear to be logical, definitive and designed to conserve good lung. They have been done with a legitimate and very low mortality. There has been no mortality and very little morbidity from local wedge resections except where undertaken under desperation circumstances (two patients following local wedge resection of a cavity from the good lung with no function in the opposite lung). Segmental excision, likewise, carries an extremely small risk, yet a higher incidence of air leakage, hemorrhage and infection. Lobectomy has been attended by 3.36 per cent mortality and pneumonectomy by 13.17 per cent mortality over a total series back through 1937 before chemotherapy was available. The follow-up period following resection has been too short to permit any final figures. My impression is that they are very good and that the procedures are eminently satisfactory. Time only will give the final answer.

We have already seen a few patients who have developed a recurrence of tuberculosis in the same or other lobes, a few who have never converted to negative cultures, and a few who have developed bronchial fistulae, empyema, et cetera, but these have been in the small minority only. Will the future return to us more of these patients with an exacerbation of tuberculosis? I fear that it may. The earlier preoperative and postoperative drug therapy was not ideal in light of our present knowledge. Resistant organisms may still survive to plague us and the patient in the future. Do these individuals, under drug therapy, develop their own powers of resistance to the same degree that they formerly did under the older program, or have they been carried on crutches with chemotherapy for a long period to collapse in time when this support has been withdrawn? Can new drugs be developed fast enough to control the organisms as they become resistant to our present weapons? Will some of our present patients with resistant organisms infect others with organisms resistant enough so that these new patients will not respond to our present drugs? Could not a combination of some of our old with the newer therapy be used to advantage, say intensive chemotherapy of a prolonged type combined with judicious adminis-

(Continued on Page 39)

THE PRESENT STATUS OF TUBERCULOSIS IN MINNESOTA

Beginning of Tuberculosis Control

A Preliminary Report

FRANCIS F. CALLAHAN, M.D.

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ACTIVE measures for treatment and control of tuberculosis actually began in Minnesota in the first decade of this century. The Legislature of 1901 authorized the Governor to appoint a Commission of three physicians to investigate the advisability of establishing a State Sanatorium. The Commission was composed of Dr. H. Longstreet Taylor, Dr. James L. Camp, and Dr. G. S. Wattom. A report and recommendations were made to the Legislature of 1903, and that body enacted a law authorizing the appointment of an Advisory Commission to be composed of five physicians. The members of the original Advisory Commission were: Dr. H. Longstreet Taylor, Dr. James L. Camp, Dr. G. S. Wattom, Dr. A. P. Williamson, and Dr. George B. Weiser.

The 1903 Session of the State Legislature appropriated \$25,000 for the purchase of land and the construction and equipping of buildings for a State Sanatorium near Walker, Minnesota. Full power to manage, control, and govern the institution was placed under the State Board of Control, which was at that time the central social welfare agency for the state. With the approval of the Advisory Commission, the Board of Control purchased 616 acres of land at a cost of \$7,565.

The original building was completed and the institution was opened to receive patients in December, 1907. The purpose of the State Sanatorium was the treatment of patients with incipient pulmonary tuberculosis who had resided in the state for at least one year prior to admission. The charge for treatment was \$1.40 per day, to be paid by the patient, his relatives, or the county of residence.

County Sanatoria Established

After the opening of the State Sanatorium for the care of persons with incipient tuberculosis,

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the Advisory Commission developed a plan for the establishment of county tuberculosis sanatoria to isolate and treat cases of advanced tuberculosis. The Commission recommended that the larger counties build their own sanatoria and the smaller counties form districts of two or more counties to construct and operate institutions for the care of their advanced cases of tuberculosis.

This recommendation was carried out only in part. Many counties refused to join a sanatorium district and insisted on sending all of their tuberculosis patients, whether incipient or advanced, to the State Sanatorium. This necessitated additional construction at the State Sanatorium to provide units for care of all stages of tuberculosis. The counties belonging to a sanatorium district were known as "organized counties" and those sending their patients to the State Sanatorium as "unorganized counties." Through the years, the staff of the State Sanatorium has never been able to conduct a case-finding program or direct sanatorium follow-up care of their discharged patients because of the distance of the unorganized counties from the institution.

Between the years of 1912 and 1918, 14 county sanatoria were constructed and put into operation, with the state contributing 50 per cent of the cost of construction and equipment up to \$50,000. Additional costs of construction and equipment since the opening of these institutions have been paid by the counties.

Originally, the cost for care at the county sanatoria averaged about \$10 per week per patient, with the state contributing \$5 or about 50 per cent of cost, for each county-pay patient. Through the years, as improved methods of treatment were initiated and the cost of wages, food and maintenance increased, the counties assumed the additional expense. The 1949 session of the State Legislature increased the state's contribution for the care of county-maintained patients from \$5 to \$7.50 per week. It is hoped that in the future the state will increase its support of county patients and return at least close to 50 per cent support with which the county institutions started.

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In 1943, the charges for county-pay patients at the State Sanatorium were revised and state aid for them was placed on the same basis as for patients of counties belonging to sanatorium dis-

construction in 1950 of a 252-bed modern tuberculosis unit at the Anoka State Hospital for the mentally ill. Tuberculosis patients from all mental institutions are now transferred to this unit for

TABLE I.

Sanatorium	Opened	Original Cost	Capacity 12-31-51	Census 12-31-51	Vacancies
Buena Vista, Wabasha	1917	\$ 62,000	38	27	11
Deerwood, Deerwood	1918	72,000	Closed	3-1-51	
Fair Oaks Lodge, Wadena	1918	105,000	Closed	11-1-51	
Glen Lake, Oak Terrace (including Children's Building)	1916	100,000	592	532	60
Lake Julia, Puposky	1916	78,000	49	42	7
Mineral Springs, Cannon Falls	1915	76,000	100	84	16
Nopeming, Nopeming	1912	48,000	277	227	50
Oakland Park, Thief River Falls	1917	105,000	55	34	21
Otter Tail County, Battle Lake	1913	55,000	45	24	21
Ramsey County Pavilion (Ancker), St. Paul	1914	**	192*	200*	
Ramsey County Preventorium, St. Paul	1915	**	40	41	
Riveraide, Granite Falls	1917	169,000	48	23	25
Sand Beach, Lake Park	1916	115,000	Closed	6-30-51	
Southwestern Minnesota, Worthington	1917	220,000	44	32	12
Sunnyrest, Crookston	1916	119,000	60	34	26
State Sanatorium, Ah-gwah-ching	1907	976,366	350	271	79
Indian Building		(included above)			
Anoka State Hospital—Burns Bldg.	1950	**	251	258	
Auxiliary Cottages	1950	**	150	130	20

*Figures do not include persons admitted to contagion ward of Ancker Hospital as suspects for whom diagnosis of tuberculosis has not been established.

**Figures on Ramsey County and Anoka State Hospital not available.

tricts. Since that time, a per diem rate for the State Sanatorium has been established annually on the basis of operating costs. Counties are charged the per diem rate minus the state aid of \$7.50 per week.

In addition to the public sanatoria, a few small private sanatoria operated in the state for a limited number of years. One 50-bed institution at Pokegama in Pine County was opened in 1905 and discontinued in 1943. At the present time, the only private facility of any importance for the care of tuberculosis cases is a unit at St. Mary's Hospital in Minneapolis designed for surgical and other special services for tuberculosis patients.

Other Installations

With the opening of the Veteran's Administration Hospital in Minneapolis in 1927, 200 beds were added to the total number of tuberculosis beds in Minnesota. Approximately 150 present tuberculosis patients at the Veteran's Administration Hospital are residents of Minnesota.

In 1943, a full-time tuberculosis control officer was appointed to make a survey of all of the patients in mental institutions. This survey was inaugurated because of the exceedingly high death rate from tuberculosis among the patients of Minnesota mental hospitals and the large number of cases of tuberculosis developing among employees of these hospitals. The study led to the

treatment. Two auxiliary units of approximately 75 beds each have been added to the tuberculosis unit at the Anoka State Hospital in order to accommodate all of the active and suspected cases found in the state mental institutions as a result of case-finding programs conducted in these hospitals.

The Minnesota State Department of Health has collaborated with the state and county institutions in case-finding, follow-up control on discharged patients, as well as providing necessary laboratory examinations for sanatoria with inadequate laboratory facilities. In December, 1906, a regulation of the State Board of Health requested practising physicians in the state to report all cases of active tuberculosis, but this did not become law until 1913. In 1911, the State Board of Health authorized their epidemiologists to make routine examinations of tuberculosis cases as they did for all other communicable diseases.

Control of Indian Tuberculosis

For many years, the State Board of Health has pointed out the extremely high rate of tuberculosis among Indians. Tuberculosis, at least for the past 100 years, has been the major health problem for Indians. The care of tuberculous Indians is the responsibility of the federal government.

PRESENT STATUS OF TUBERCULOSIS IN MINNESOTA—CALLAHAN

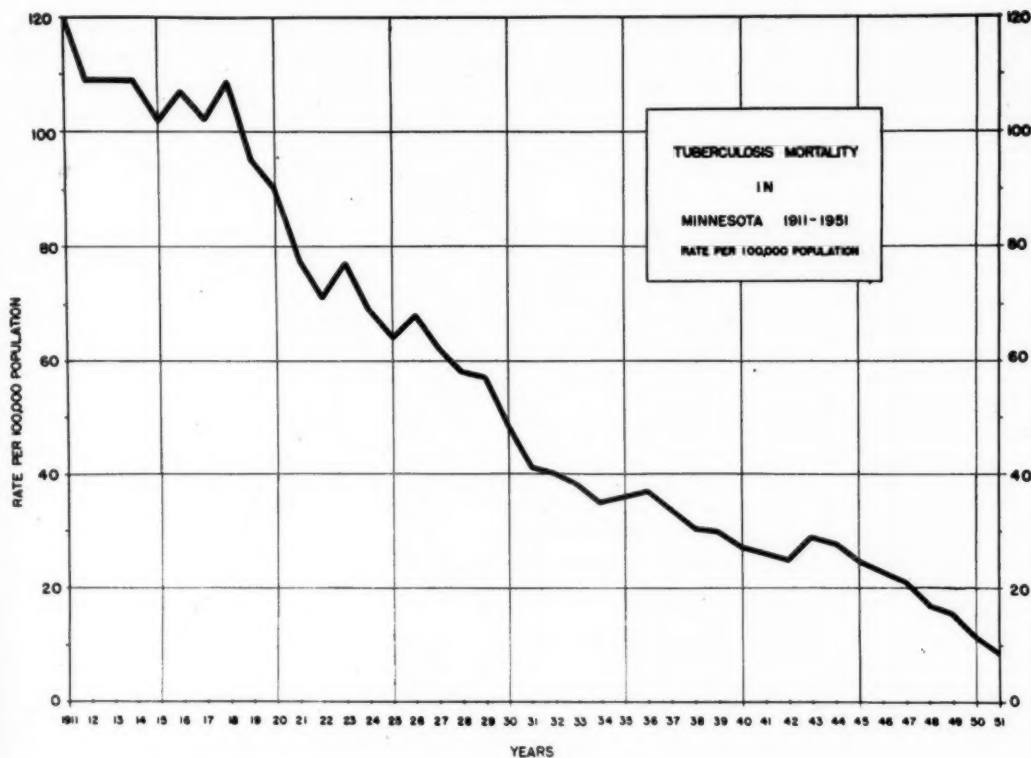


Fig. 1.

Largely through the efforts of Dr. A. J. Chesley, executive secretary of the Minnesota State Board of Health, and his co-workers, the federal government purchased land from the State Sanatorium and in 1934 constructed a 100-bed modern tuberculosis unit for the care of Indians at the State Sanatorium. This unit is operated by the Sanatorium staff and the actual cost of care given to the Indians in this institution is paid for by the federal government. The service is rendered on a contract basis, and the contract is readjusted and renewed from year to year. Since April, 1950, Out-Patient Clinics have been operated for case-finding and follow-up care of discharged sanatorium patients in the three Indian hospitals located at Cass Lake, Red Lake, and White Earth. These clinics were organized and are directed by Dr. E. A. Leggett of the State Sanatorium staff with the assistance of the medical and nursing services of the Minnesota State Department of Health and the federal Indian Medical Service.

Contributions to Case-Finding and Surgery

In reviewing the tuberculosis work since the

Minnesota sanatorium plan has been in operation, it is timely to mention some of the contributions in case-finding that have come from within the state. In 1924, Dr. S. A. Slater¹ published a paper on the importance of tuberculin testing of school children in the Southwestern Minnesota Sanatorium District as a case-finding procedure. Briefly, his findings pointed to the fact that most positive reactors among school children acquired their infection either in the home or in school. This work of Dr. Slater's developed into the best case-finding program until the development of the mass x-ray screening. Even with the latter method, most tuberculosis workers feel that the tuberculin test should be used in conjunction with x-ray screening whenever possible.

In September, 1943, Dr. G. A. Hedberg and his co-workers² in St. Louis County started the first over-all x-ray screening program of normal citizens to be conducted in the state. The success of the St. Louis County program and that of screening programs at military induction centers led to the purchase of mobile x-ray units by the Minnesota State Department of Health. This

PRESENT STATUS OF TUBERCULOSIS IN MINNESOTA—CALLAHAN

was done with financial assistance from the U. S. Public Health Service. These units are operated throughout the state in all counties not having a mobile x-ray unit of their own. On occasion,

In order to make surgical care available to all patients in the state, a law was passed in 1941 which made it possible for a patient to be transferred to a sanatorium in the event he needed

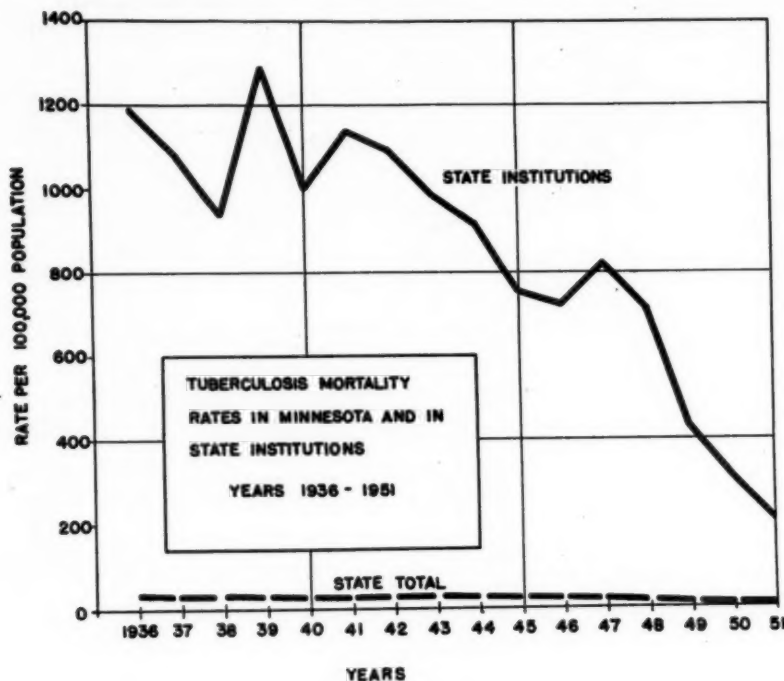


Fig. 2.

State Board of Health and U. S. Public Health Service units have been used in counties having mobile x-ray units of their own in order to supplement county facilities in conducting massive tuberculosis surveys.

The Minnesota Public Health Association, now the Minnesota Tuberculosis and Health Association, organized in 1915, has been important in educating the public regarding tuberculosis. It has also conducted clinics in the unorganized counties in the state and has given assistance to the staffs of county sanatoria in their tuberculin testing and x-ray screening programs.

The Minnesota Trudeau Consultation Committee was organized in 1941 under the direction of Dr. A. J. Chesley. This committee visits sanatoria on invitation, offers consultative advice on the care and treatment of patients, and aids the sanatorium superintendents in procuring for their patients services that are not available in the patient's sanatorium of residence.

surgery which could not be performed in the sanatorium district of which he was a resident. The law provided that the cost of such surgical care would be divided equally between the state and the patient's county of residence. In 1945 the law was amended to include special diagnostic studies that were not available in the patient's home sanatorium. In January, 1951, the director of social welfare issued a regulation permitting the sanatoria providing such special services to make charges in addition to the non-resident per diem rate to cover complete surgical and special services.

Actually, the modern treatment of tuberculosis requires institutions specially equipped and staffed to care for pulmonary disease. The units of state government and medical groups especially interested in the control and treatment of tuberculosis are working together with the idea of bringing about the best over-all care of all tuberculous citizens of Minnesota as rapidly as possible.

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There has been a marked fall in the death rate from tuberculosis during the past five years. Undoubtedly, this has been slightly influenced by the change made in recording tuberculosis deaths by the Minnesota Department of Vital Statistics.

torium and Nopeming Sanatorium, with a small number of Sand Beach patients going to Sunnyrest Sanatorium at Crookston. It is believed that it will be possible to close or divert more of the small county institutions in the near future.

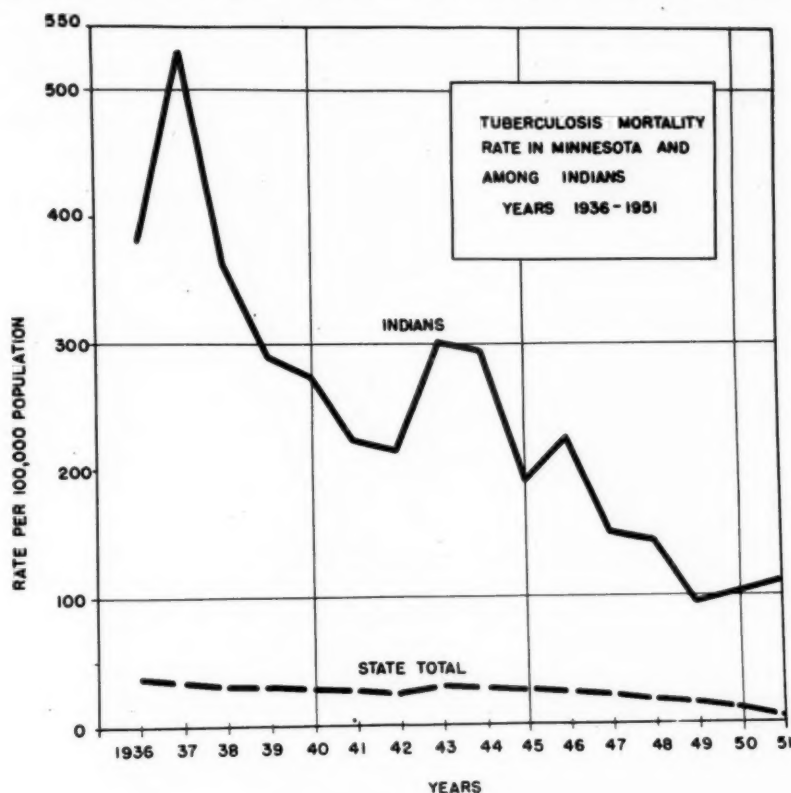


Fig. 3.

However, along with the decrease in death rate, there has been a gradual decline in the number of patients receiving sanatorium treatment during this period.

By 1949, a large number of counties had been surveyed and it was felt that the time was right to introduce enabling legislation to discontinue or divert county sanatoria to other purposes. This enabling legislation was passed, and in 1951 Deerwood Sanatorium at Deerwood, Sand Beach Sanatorium at Lake Park, and Fair Oaks Lodge Sanatorium at Wadena were closed. At the present time, Sand Beach and Fair Oaks Lodge are operated as nursing homes for the aged and similar plans are in the making for Deerwood Sanatorium. Most of the tuberculosis patients in these institutions were transferred to the State Sana-

The case-finding and treatment program in St. Louis County has been so successful that it has created many vacancies at Nopeming Sanatorium. This has made it possible to send most of the active cases from several northeastern Minnesota counties to Nopeming for treatment, thereby creating vacancies at the State Sanatorium so that this institution should be able to receive the patients from other county sanatoria in northern Minnesota if and when they are ready to close.

Trends in Tuberculosis Control

The tuberculosis mortality rate in the state was over 100 per 100,000 population per year for the first decade of this century. It reached its highest point, 119.3, in 1911 and has declined steadily since, with the exception of two brief periods: the

first during the influenza epidemic in 1918 and 1919; the second, during World War II between 1943 and 1945. The sharpest fall in the mortality rate during this century took place between 1947 and 1951, reaching its low point, 8.5 per 100,000 population, in 1951. Unfortunately, no accurate morbidity rates are available on a statewide basis at this time. If present trends continue, it would seem that adequate control, if not complete eradication, of tuberculosis should be achieved within a few years as far as the stable population of the state is concerned. However, there remains a hard core of tuberculosis types which will require special methods to control:

1. Recalcitrant positive sputum cases, who refuse to accept treatment over a sufficient period of time to arrest their disease. These cases constitute one of our greatest public health menaces as far as tuberculosis is concerned. They fall into four classes: psychopaths, alcoholics, criminals, and tramps. They are usually males and most frequently chronic alcoholics. While they are in the sanatorium, they are disciplinary problems and disturb the patients who are trying to get well. When they are out of the institution, they live in rooming houses, eat in restaurants, and patronize bars as long as their money holds out.

The problem of controlling and eradicating tuberculosis in this group of cases cannot be carried out on a voluntary basis. Separate quarters with proper restraints must be set up and maintained in one or more of the state institutions for the care of these people in order to protect the interest of the normal tuberculosis sanatorium patient and the health of the community at large. Attempting to treat patients from these groups in a standard tuberculosis sanatorium is simply a waste of the taxpayers' money unless these individuals know that they can be put in an institution from which they cannot escape if they do not conform to the usual sanatorium rules and regulations.

The state has adequate laws on the books to control these people but lacks proper facilities for their confinement. Dr. Albert Krieser, State Tuberculosis Control Officer for psychiatric and penal institutions, believes that a 50-bed addition to the Anoka Tuberculosis Unit, with private rooms that can be barred and locked, would provide satisfactory quarters for the treatment of all recalcitrant sanatorium patients, penal tuberculosis cases, and dangerously insane tuberculous patients.

2. It is felt by tuberculosis workers that displaced persons, most of whom come from countries in Europe heavily infected with tuberculosis, will have a much higher rate of breakdowns from tuberculosis than the normal population, even though they show no evidence of active disease when they are admitted to the United States. For this reason, it is believed that all displaced persons should be screened at least once a year for active tuberculosis over a period of five to ten years after their arrival from Europe.

3. The federal government provides for the care of persons who contract tuberculosis while serving in military units stationed in Minnesota. However, no provision is made for the care of their families. In order to protect its own citizens, provisions will have to be made in Minnesota for the immediate hospitalization of all service men's families who have positive sputums, where they will be isolated and under treatment while arrangements are being made for their transfer to their state of residence.

4. Migratory, agricultural, and industrial workers create another serious public health problem. When these persons contract tuberculosis, they are supposed to be returned for treatment to the states in which they have residence. Frequently, a great deal of time is lost in making arrangements for their return, and very often their home states either have no available tuberculosis beds or refuse to accept them for treatment. In the meantime, these persons live in boarding houses and hotels and create a serious public health menace.

The migratory chronic tuberculosis cases have been a public health problem in this country for years. Few of them have money and most of them believe that a change of climate would be the answer to their health problem. Most of these people have no technical or professional skills; and when they need money and food they almost invariably seek employment in restaurants because the work is light, they can keep warm and get enough to eat. It would therefore seem logical to set up some arrangement for yearly screening of restaurant workers and food handlers throughout the state. Without adequate control measures for the migratory and recalcitrant cases of tuberculosis, it is doubtful whether the incidence of this disease in Minnesota will fall very far below its present level.

Service-Connected Tuberculosis

A high percentage of Americans, particularly from this section of the country, have never had tuberculous infection before induction into military service. Thousands of these inductees serve in European and Asiatic countries where the incidence of tuberculosis is very high. Many of these men and women will have their first real exposure to tuberculosis in military service and a certain number of them are bound to develop active disease later on. In addition to x-ray examination of the chest, skin tuberculin testing on induction into, and separation from service should yield valuable information. When active disease develops in veterans who have been so tested it would give the best evidence of determining whether or not the individual's tuberculosis is service-connected.

General Comment and Summary

Great progress has been made in all phases of tuberculosis management during the past years. Many mistakes have been made, but on the whole the program has been good; and there has never been any relaxation of the effort of Minnesota tuberculosis workers to alleviate the lot of the tuberculous patient and to protect his family and neighbors. In the early days of the sanatorium program, the isolation of the positive sputum case was, in most instances, more important to the community than the actual treatment of the patient. Today, the tuberculous patients who can adjust themselves to a good sanatorium regime and complete the treatment prescribed for them are usually assured of a good clinical result.

The improvement in the treatment of tuberculosis has been brought about by several factors:

- (1) Better case-finding methods; (2) more adequate education of the public; (3) marked improvement in anesthesiology and surgical methods in the definitive treatment of pulmonary disease; (4) proper use of antibiotics, particularly streptomycin and other chemotherapeutic agents in both the medical and surgical treatment of tuberculosis; (5) rehabilitation started during and continued after sanatorium treatment.

While the results obtained in the treatment of tuberculosis during the past few years have been good, this is no time to adopt an attitude of complacency. Total war or other national catastrophe that would disrupt the present program of care and bring about serious physical hardships to large numbers of our citizens could bring about a serious increase in this disease.

Conclusions

Minnesota should:

1. Establish a tuberculosis unit where recalcitrant and other uncontrollable positive sputum cases of tuberculosis can be kept under restraint until they are no longer public health menaces.
2. Establish a routine procedure for the immediate isolation of positive sputum cases who are not eligible for county or state care.
3. Increase state aid for county-pay patients in all state and county sanatoria.
4. Continue x-ray screening of the entire normal population.

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THE CHANGING TREATMENT OF TUBERCULOSIS

(Continued from Page 32)

tered artificial pneumothorax? Many of the complications of pneumothorax were related to its injudicious use. Is our present treatment the one which we will be using four or five years hence? I doubt it. The whole treatment of pulmonary tuberculosis at the present time is in such a state of flux that it is difficult to keep

abreast of new developments. The broad outlook appears promising. We appear to be headed in the right direction, and we appear to be making ground, but we must keep ever alert for variations and improvements, and try to give our patients the best and most up-to-date treatment available in an ever changing field.

TREATMENT OF ANEMIA

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KNOWLEDGE regarding the metabolism of iron has been accumulating for many decades and the past thirty years particularly have been fruitful in this regard. The experimental use of radioactive iron during the past ten years has allowed many studies that previously would have been impossible. All these studies are adding to general knowledge of the way in which iron is absorbed, utilized and excreted. The requirements of the body for iron can be divided into two main groups: (1) physiologic requirements for growth, for pregnancy and lactation and for blood lost through menstruation; and (2) pathologic requirements when, as the result of loss of blood, increased amounts of iron are needed in order to maintain body metabolism, or when situations arise in which abnormal absorption or retention of iron may be present.

Until relatively recently, it was the normal view to consider that, after the period of growth had been attained in the male and after the climacteric in the female and in the absence of loss of blood, iron was held so tenaciously by the body that no further need existed for this element. Improvements in methods of research have pointed out that this viewpoint must be modified, since loss of iron occurs as the result of daily wear and tear by means of the loss of iron-containing cells throughout the body. This loss amounts to at least 1 mg. per day and it is quite possible that current investigations will lead to further revision in knowledge of the total normal loss of iron and will show that the amount of iron lost is considerably greater than was previously believed.

The average man who weighs 70 kg. has between 4.5 and 5 gm. of iron in his body. Of this amount, about 65 to 70 per cent is found in the hemoglobin of the blood and muscles, the latter constituting a relatively small amount. About 20 to 25 per cent of the total iron in the body is found in storage depots, such as the liver, spleen and kidney. The remainder is parenchymal, where

it is not available for use as hemoglobin; in this form it is found in such material as cytochrome, catalase and peroxidase. The iron that is stored in such depots as the liver, spleen and kidney, is available for replacement of hemoglobin.

Normally, the average diet in the northern part of the United States contains 10 to 12 mg. of iron per day but of this amount, only about 10 per cent is absorbed. The iron is absorbed in the ferrous form by the mucosal cells of the gastrointestinal tract and is combined in the ferric form with apoferritin to produce ferritin. Definite limits are present as to the amount of ferritin that the cell can contain, so that these mucosal cells become physiologically saturated and no further iron is absorbed. When the amount of ferritin has decreased to the point at which the mucosal cells are no longer physiologically saturated with iron, then more can be absorbed from the intestine.

Iron is transported in the blood stream as serum or plasma iron. Under basal conditions, the amount of serum iron is relatively constant but a prompt rise is noted after oral administration of a single dose of iron, either in food or as a salt. Values for serum iron are decreased in states of iron deficiency and in patients who have anemia caused by infection, but are increased in patients who have pernicious anemia, hemolytic anemia, refractory anemia, hemochromatosis or hepatic disease. When the body needs iron, as in pregnancy and states of iron deficiency, the uptake of iron is increased to more than normal, whereas in diseases in which stores of iron are abundant, such as hemolytic anemia and pernicious anemia, little absorption takes place. After acute loss of blood, no sudden increase occurs in absorption of iron but apparently a lag is present because of the mucosal physiologic saturation that must be overcome before increased amounts of iron are absorbed.

As mentioned previously, a number of periods exist in which physiologic demands for iron are great. The greatest relative need for iron is in infancy when, because of relatively striking growth, the volume of blood is much increased and, therefore, the need for iron and hemoglobin

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From the Division of Medicine, Mayo Clinic, Rochester, Minnesota.

is increased. After the first two years of life, the need for iron is fairly steady because then the rate of growth is slow and relatively uniform. Then at puberty, with accelerated growth, needs for iron are again increased in both the male and the female. The institution of menstruation introduces a second need for iron in the female. Furthermore, in the female an increased physiologic demand for iron is present during pregnancy and lactation. Thus, it is to be expected that hypochromic or iron-deficiency anemia would be seen more commonly at these periods, particularly if any abnormality of menstruation occurs or if an inadequate state of nutrition is present.

Hypochromic Anemia

The necessity and desirability of careful investigation of patients who have hypochromic anemia in order to determine the source of the anemia have been universally emphasized. This is particularly true for male patients but an adequate explanation for the anemia of female patients should be sought for just as diligently. It must be admitted that at times no satisfactory explanation for the anemia can be found, or the cause of the anemia becomes apparent only after several years of observation of the patient.

The critical hematologic values at which patients are considered to be anemic vary from institution to institution or hospital to hospital. It is my impression that many perfectly normal women are encountered whose erythrocytes number approximately 4,000,000 per cubic millimeter of blood and who have a value for hemoglobin from 11 to 11.5 gm. per 100 cc. Likewise, my colleagues and I prefer to consider the lower limits of normal values for hemoglobin in the male to be between 12.5 and 13 gm. and it is only when values are less than these levels that the problem of anemia is considered seriously. It is always difficult to estimate what relationship a slight decrease in hemoglobin might have to the patient's fatigue and weakness; my observations make me consider that a decrease of at least 2 to 3 gm. must be present before symptoms of this kind can be attributed to the anemia. Also, it has been observed many times that patients in whom anemia develops slowly can adjust themselves so well to decreased values for hemoglobin that they are not particularly aware of fatigue and weakness; it is only after their

hemoglobin has been increased to normal that they realize that what they considered to be a normal situation was actually one of considerable fatigue.

No definite rules can be laid down for the examination and investigation of these patients. The history of long-standing anemia often almost automatically excludes the possibility of any serious disease. From a careful history and physical examination, together with good judgment, the examining physician can determine the extent of the investigation needed. Obviously, anemia appearing for the first time in older men or women should receive an extremely thorough investigation. The type of anemia and the hematologic picture that accompany loss of blood or lack of iron from a nutritional standpoint are those of hypochromia; microcytosis, normocytosis or occasionally macrocytosis may be noted. If definite bleeding is found and corrected, in most cases cure will result automatically if the patient is receiving an adequate diet.

This process can be speeded up by the oral administration of iron. It should be emphasized that the result of treatment of hypochromic anemia with iron salts is positive and that there should be definite and continued improvement until the hemoglobin returns to normal. Whether or not administration of iron will lead to a response can be determined in most cases from the response of the reticulated erythrocyte. Just as in the treatment of pernicious anemia, if treatment is effective and if the initial level of hemoglobin is low enough, there will be a response from the reticulated erythrocyte which will reach its peak between the eighth and fourteenth days of treatment. The height of this response is never very great but will often run between 4 and 6 per cent and occasionally as high as 10 to 12 per cent. There should then be a steady increase in the hemoglobin to a normal value. After the hemoglobin has returned to normal, a long period is required for the stores of iron to be returned to normal since in iron deficiency states the increased absorption of iron apparently stops as soon as the demands of the bone marrow for increased hematopoiesis have been met. It becomes obvious then that if the response to iron therapy is not prompt, either the loss of blood is greater than the hemoglobin formed or, as can be more commonly assumed, the diagnosis

and treatment are incorrect and a new start must be made to determine what might be wrong.

In some instances hypochromic anemia is apparently the result of failure of the mucosal cells to absorb iron. Instances of this type of anemia are rare. More often inability to tolerate the preparation of iron leads to discontinuance of its use. Certain preparations cause intestinal irritation in a much higher percentage of cases than other preparations do. Both ferric citrate and ferric ammonium citrate have a relatively high percentage of gastrointestinal reactions. For this reason, for many years now ferrous carbonate, ferrous sulfate and other ferrous salts have been utilized in the treatment of hypochromic anemia. Very often giving the medication with the meal will enable the patient to tolerate it and, likewise, starting with a small dose and increasing it gradually to the maintenance dose will enable others to tolerate the medication. A total dosage of 15 to 20 grains (1 to 1.3 gm.) per day of ferrous salt is adequate. I know of no data to support the thesis that liver extract or liver preparations of any kind are of particular benefit in the treatment of this type of anemia except for that amount of regeneration of hemoglobin which one would expect from the iron content of the liver. What little benefit might accrue from the use of liver extracts which have been especially prepared for this type of anemia do not give the patient sufficient benefit to warrant their expense.

For many years iron preparations have been available for parenteral use, particularly in the form of iron cacodylate as well as other types of colloidal iron preparations. These could be given in only relatively small amounts and use of some of the colloidal iron preparations was attended by a high incidence of reaction in the form of chills, fever, nausea, vomiting and pain. Because of the severity of reactions, many observers felt that there was no specific indication for ever giving iron parenterally. With the introduction of saccharated iron oxide preparations, or the so-called high molecular iron, it is now possible to give relatively large quantities of iron parenterally in a single dose and with little chance of untoward reaction. A number of these preparations are on the market at present but the indications for their clinical use are and should continue to be strictly limited for the following

types of patients. 1. A few patients are so intolerant of iron that it is impossible for them to take it orally in any of its usual forms. 2. There are apparently too some persons who, though able to tolerate iron that is orally administered, seem to have some interference in the absorption mechanism in the gastrointestinal tract and, therefore, are unable to make available to the body the iron which is taken into the gastrointestinal tract. 3. It is conceivable that in very rare instances the parenteral administration of iron might be desirable in an attempt to restore the hemoglobin rapidly after loss of blood rather than to give the patient transfusions.

The mode of administration of these saccharated iron oxide preparations is very simple. Although there are several methods for calculating the amount of iron required to restore the hemoglobin, the simplest method is to calculate a need of 25 mg. of metallic iron for each 1 per cent deficit in the hemoglobin. The first injections of iron should be small, only 25 to 50 mg. of metallic iron, in order to determine whether the patient has any reaction. If no reaction occurs, the dosage can be increased to 100 mg. of metallic iron per injection and injections may be given as often as twice a day. In this way, large quantities of metallic iron can be introduced into the body in a relatively short time. The reactions which may occur are those which have been previously mentioned. The response to parenterally injected iron is rapid and the peak response of the reticulated erythrocytes occurs somewhere between the fifth and the twelfth or fourteenth day. An amount of iron in excess of that calculated for restoration of hemoglobin to normal is desirable when this method is used in order to provide a reasonable amount of iron for storage. It should be emphasized that indications for the intravenous use of iron are few and that in almost all cases of hypochromic anemia oral administration of iron will be satisfactory.

Other Types of Anemia

A great many of the anemias seen in practice have no relationship to either loss of blood or to nutrition. In these instances, the stores of iron in the body are adequate and there is no need for giving additional iron or any benefit to be derived from it. In such diseases as pernicious anemia or any of the hemolytic anemias, there

are large quantities of iron in the body, usually far more than the average normal, and these are available for conversion into hemoglobin. Likewise, a great many anemias are seen which are the accompaniment of some other primary disease, such as the anemia which so commonly accompanies rheumatoid arthritis or the anemias seen in association with infections, glomerulonephritis or the various types of malignant lesions in which there is no loss of blood. In this group also are anemias commonly associated with the blood dyscrasias such as those seen in the various groups of the lymphomas or of the leukemias. Here there is no deficit in iron content in the body and the administration of iron orally cannot be expected to result in any benefit to the patient.

Pernicious Anemia.—Over the years, a great deal has been written about the differential diagnosis of the macrocytic anemias. In this part of the country, pernicious anemia constitutes about 95 to 98 per cent of all of the macrocytic anemias seen in practice. Due attention should be paid particularly to the cardinal symptoms of this disease: (1), the glossitis, (2), the typical constant glove and stocking type of paresthesia which occurs in a high percentage of cases, and (3), the diarrhea which occurs in a relatively smaller proportion of the cases. In addition to studies of the blood and a suggestive history, it is important that the presence of achlorhydria be established, preferably after the injection of histamine before the diagnosis of pernicious anemia is made. Failure to ascertain whether free hydrochloric acid is present or absent can lead to considerable embarrassment, particularly if free hydrochloric acid is demonstrated after the patient has been treated for a long period for pernicious anemia and then, because adequate amounts of free hydrochloric acid can be demonstrated, the patient has to be told that he does not have pernicious anemia. This can result only in resentment toward the physician who has advised the use of the liver extract. Although examination of the bone marrow has certain advantages, it is not a necessary preliminary in the treatment of patients with pernicious anemia.

An adequate history, the demonstration of macrocytic anemia and of the absence of free hydrochloric acid are from a practical standpoint sufficient evidence for advising treatment with

potent material in the form of either a good liver extract or of vitamin B₁₂. Because of the increased association of carcinoma of the stomach and pernicious anemia, it is always desirable to have a roentgenoscopic examination of the stomach before treatment is started as well as at yearly intervals thereafter. The result of treatment of pernicious anemia with any type of potent material is almost always very effective. If the initial level of erythrocytes is less than 3,000,000 cells per cubic millimeter of blood, it is possible to determine, within a week as a rule, by study of the reticulated erythrocytes, whether or not the response to treatment is adequate. The height of the reticulated erythrocytes at the peak of the response, that is, between the fifth and eighth days, will vary inversely with the level of the initial counts. With inadequate initial dosage, a suboptimal response will be obtained so that in these cases a secondary increase of reticulated erythrocytes may be experienced. However, if initial therapy has been adequate and if adequate treatment is continued, no further reticulated erythrocyte response will be seen.

Patients with pernicious anemia can be divided into two groups for treatment purposes, (1) those who have anemia alone without neurologic symptoms, and (2), those in whom neurologic manifestations play a large role or are the primary symptoms. For the first group, for many years I have used 15 units of a good potent preparation of liver extract and have given this amount initially on three successive days. Then 1 cc. of this 15 unit material is injected once a week until the concentration of hemoglobin and the erythrocyte count have returned to normal. After this, the interval between injections is gradually increased. By observing the levels of hemoglobin and erythrocytes in the blood and the appearance of the patient, I can then determine what the interval should be between injections. It is ordinarily not deemed advisable to give the material at intervals longer than three or possibly four weeks since there is no particular advantage in attempting to make the interval as long as possible. For the patient who has neurologic manifestations, the initial dose is the same, then 15 units of the material are given at intervals of five to seven days and the patient is observed for improvement. At the end of two months, if improvement is not occurring satisfactorily, the amount of potent material given at each injection

should be increased or the interval between injections should be decreased. This increased dose should be employed until all neurologic manifestations have disappeared and only then can a longer interval between injections be used. At the Mayo Clinic we offer our patients the opportunity to learn to give their own injections but warn them of the desirability of regular checks on their hemoglobin and erythrocytes as well as informing them of the necessity of increased amounts of potent material in the event of any intercurrent illness, or if they should happen to have a recurrence of any of the cardinal symptoms of their disease.

There is no reason to believe that vitamin B₁₂ will not do everything that a good potent liver extract will do and by substituting 15 micrograms of vitamin B₁₂ for the 15 units of liver extract, basically the same result will be obtained. Although folic acid will bring about a response in the blood in cases of pernicious anemia, in view of the fact that it will not control and even will permit the development of gastrointestinal and neurologic manifestations, the use of this material is essentially contraindicated.

Other Types of Macrocytic Anemia.—Other members of the group of macrocytic anemias are seen very rarely in Minnesota and the surrounding territory. Occasionally cases of nontropical sprue, the so-called pernicious anemia of pregnancy, and macrocytic anemia of infancy may be encountered. There is still variable opinion as to any single method of treatment in these cases.

However, folic acid given orally will bring about a response in some of these cases in which previous trial of vitamin B₁₂ has failed. The dose of folic acid is 5 to 15 mg. daily.

Summary

Iron therapy is indicated whenever anemia is due to a loss of blood or an inadequate supply of iron on a nutritional basis. Except in rare instances, the treatment should be oral administration of one of the iron salts, such as ferrous carbonate, ferrous sulfate, ferrous gluconate or any other ferrous preparation. Under unusual circumstances and in the rare instance in which the patient is intolerant of iron to the point that he cannot take it orally, iron can be given by the intravenous route with only slight risk of reaction. Iron is not of benefit in the treatment of the anemias of infection, malignant disease, rheumatoid arthritis, and so forth, unless loss of blood or iron deficiency on a nutritional basis is associated.

The treatment of pernicious anemias consists of giving potent liver extract or adequate concentrations of vitamin B₁₂. The amounts given depend on the type of involvement since patients with neurologic manifestations require much greater quantities of potent material in order to obtain benefit. The other rare macrocytic anemias, must be treated essentially on a trial basis to determine whether folic acid or vitamin B₁₂ will bring about a response. In all cases, regardless of type, the importance of an adequate diet cannot be overemphasized.

CONFINEMENT OF TUBERCULOSIS PATIENTS

Even in a community with plenty of tuberculosis beds, it can hardly be expected that every patient with chronic tuberculosis and positive sputum be hospitalized indefinitely. For example, the intelligent and relatively asymptomatic elderly patient, unsuitable for additional therapy other than rest, retired on a pension and living in a home without children, can remain at home without excessive danger to himself or to others. The irresponsible bar fly, who finally persuades the tavern owner to

let him wait on table or work in the kitchen to help pay for his drinks, clearly needs continued institutionalization of some type. Even where tuberculosis beds are limited, and when there is little to offer therapeutically, it is justifiable to use every reasonable means to confine such a patient to a sanatorium or hospital indefinitely.—Committee on Therapy, American Trudeau Society, *The American Review of Tuberculosis*, May, 1952.

COMMON OCULAR MANIFESTATIONS OF DIABETES MELLITUS

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DIABETES may be accompanied by changes in nearly all the structures of the eye. The more serious changes are those which occur in the retina. Those changes in the retina which can be said to be due to diabetes alone are probably second in frequency to those occurring in the lens.¹⁷ However, because of the common association of arteriosclerosis and hypertension with diabetes, the number of cases with retinal lesions is much greater than those showing other pathology.

Among the changes noted but of lesser importance are subconjunctival hemorrhages seen under the bulbar conjunctiva. These usually clear up spontaneously in a few days.

Changes in refraction are quite common in diabetes, especially among those in the older age groups. This may be evidenced by sudden decrease in visual acuity which had previously been normal or it may manifest itself by frequent small changes in visual acuity over short periods of time and result in the patient asking for refractions frequently. Needless to say, one should be careful about changing lenses for diabetics until their diabetic condition is stabilized. The cause of such refractive changes in the diabetic is not definitely known. Duke-Elder feels that it is due to a change in the lens. He states that as the blood sugar rises, provided available water reserve is maintained, the osmotic pressure of the aqueous tends to decrease, largely due to the elimination of osmotically active substances from the blood in the increased flow of concentrated urine. The lens is a comparatively stable system, not readily participating in the fluctuations common to all body fluids, and, therefore, will tend to maintain its original molecular concentration. Therefore, in order to maintain osmotic equilibrium, fluid will tend to flow into the lens from the chambers of the eye. The lens will then swell, causing an increase in its curvatures with a resulting myopic change. With a fall in blood sugar, a reverse in osmotic flow occurs and a hyperopic change occurs. One should always suspect diabetes when

unexplained sudden refractive changes occur, especially in the adult.⁴

The ability to do sustained close work may be impaired in the diabetic because of a weakened ability of the eye to accommodate. In some, attempts to do close work are followed by headache, blurred vision and vertigo. The condition may improve on treatment of the general condition but often these people may have to use a stronger lens than usual for close work.¹⁸

Occasional cases of paralysis of an extraocular muscle are noted in this disease. They are thought to be due to a neuritis affecting the nerve supply of the muscle or to a thrombotic lesion involving the ocular nuclei. The sixth nerve is most frequently involved with a resulting paralysis of the lateral rectus muscle. One eye only is usually involved. The resulting diplopia is usually exaggerated on turning the eyes to the affected side. The condition may last a long time but usually returns in two or three months to a normal state. The oculomotor and trochlear nerves may also be involved with paralysis of the muscles they innervate and supranuclear involvement may also develop with paralysis of upward and downward movements and convergence.⁵

In the iris the most frequent diabetic changes occur in the pigment epithelium and are characterized by edema, swelling and degeneration of the epithelium, with liberation of free pigment. The stroma is not ordinarily affected but in some instances may also be edematous and atrophic. Evidence of degeneration may also be found in the sphincter, dilator and ciliary muscles in this condition.

In rare cases of diabetes the condition Rubeosis Iridis is found. This is characterized by a proliferation of new vessels on the surface of the iris in the form of a ring around the pupillary border. Gonioscopic examination will often show large vessels running peripherally into the angle where they break up again into many branches connecting with Schlemm's canal and forming anterior synechia. A recurrent hyphema and glaucoma are commonly associated with this condition. The glaucoma responds very poorly to the usual

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procedures used for reduction of the tension. Histological examination of these cases has shown that the new vessels were not associated with inflammation or new tissue but lie in and upon the iris itself. The choroidal vessels are often dilated and in either region there may be extravasations of blood.⁶

A diabetic iritis is mentioned in the older literature but of late years most authorities feel iritis in diabetics is due to some intercurrent infection. We have had several cases of iritis recently which responded very poorly to the usual treatment. On further examination of these cases mild diabetes was found. As soon as the diabetes was treated also, the condition cleared readily. Some cases of serous iritis in diabetics seem prone to develop hyphema. One should always suspect hyperglycemia when hemorrhage is seen in iritis.

The occurrence of cataract among patients suffering from diabetes is quite common. The reason for this is not definitely known. Many of these people are in the age group when ordinary senile cataract may be found. O'Brien found that the normal blood sugar level was disturbed in about 50 per cent of 238 cases of senile cataract. He felt that the higher than normal concentration of sugar in the fluids surrounding the lens over a period of years may lead to the development of cataract.¹⁴

The typical diabetic cataract is the opacity occurring in younger diabetics. They are of two general types. They are usually present in both eyes but more advanced in one. In one type there are numerous fine punctuate snowflakelike opacities in the anterior and posterior cortex close to but not immediately beneath the capsule. Sometimes iridescent granules are associated with the opacities. The other type is a posterior saucer shaped subcapsular opacity composed of confluent granules. However, the two types may be present in the same lens. These cataracts often develop over a period of months but in some young diabetics they may develop in a period of weeks or less where the diabetic control is poor and by institution of vigorous treatment of the diabetes they can often be greatly reduced or eliminated completely.¹²

O'Brien and Allen in a series of 260 young diabetics under twenty-one years of age, found 13 per cent had cataracts. In each instance the diabetes was poorly controlled for months or years before the cataract developed. They reported arrested

development after satisfactory control. Waite and Bethune, in a series of 2,870 diabetics under twenty-one years of age, found opacities in 4 per cent. These were all severe diabetics. Fifty per cent of those with cataracts were out of control when first seen. The remainder of the cataracts developed in spite of good treatment.¹⁵

Priscilla White found cataract in 1.4 per cent of 2,191 diabetics and feels that they are due to poor control.¹⁹

Mars reported a series of sixty-one cases of juvenile diabetics of ten to twenty years' duration. There were no cataracts in his series. They were a group of diabetics well controlled from the beginning of the disease. He feels that there is no definite evidence of increase of cataract with increase in the age of a patient or duration of the disease, and that with good control there is definitely a decrease in the percentage of opacities. The treatment of cataract once developed in the diabetic is similar to that in any other individual. The diabetes should be well controlled before operation as the incidence of hemorrhage post-operatively is higher in diabetics than in the normal.¹²

Lipemia retinalis is certainly not a common finding in diabetes but perhaps should be mentioned here. Lipemia, a condition where the blood is altered in its appearance by the presence of fat in an emulsified state, is found in diabetes, alcoholism, starvation, phosphorus poisoning and xanthomatosis. However, it is only in diabetes that the changes can be seen in the retinal vessels. Eighty per cent of the cases have been reported in the female and the average age is twenty-five years. Most of the patients have severe acidosis at the time. Clinically the condition is first observed in the periphery of the fundus where the vessels become milky and hazy in appearance and gradually this spreads towards the disc. The arteries and veins gradually become flat and ribbon-like in appearance. In some cases the vessels near the disc are salmon-colored at this stage. In some cases there is a more yellow color to the vessels and often there is seen yellow-white stripes accompanying the arteries and veins as if the perivascularis were infiltrated with fat. In all cases the light reflex from the vessels becomes diffused or lost. The disc and remainder of the fundus are usually normal. In the worst cases the vessels become dull ivory in color and the fundus tends to become lighter in color due to similar changes

in the choroidal vessels. When the condition clears up the periphery is the last to become normal in appearance.⁷

The most common and serious eye complications of diabetes are those occurring in the retina.

It is often difficult to determine whether or not the changes found in the retina of diabetics are entirely due to diabetes or whether they have been modified by some intercurrent disease such as sepsis, hypertension or nephritis.

The earliest and most characteristic early diabetic changes in the retina are the small round red spots found in the posterior pole of the eye, usually near the macula. They were formerly thought to be small hemorrhages but have been proved by Ballantyne³ to be microaneurysms. This work has been confirmed by Friedenwald⁸ and Ashton.² These spots will at times show a central light reflex on ophthalmoscopy, and are usually found in the inner nuclear layer. They vary from thirty to ninety microns in diameter. At this stage one may see small and larger round hemorrhages which are due to rupture of the aneurysmal walls and some which are deeper and confined to the outer molecular and outer nuclear layers. These appear to be from the plexus of capillaries at the outer boundary of the outer nuclear layer. Some of these microaneurysms undergo a process of thrombosis and cicatrization with formation of a small white spot seen ophthalmoscopically. Exudates are seldom seen clinically in the early changes previously mentioned but Ballantyne has seen clumps of albuminous material histologically in the middle and deeper layers in the earliest stage.

It is not uncommon to find the microaneurysms alone near the macula clinically. At a little later stage small hemorrhages and white dots may appear. The latter are never found without the aneurysms. The nature of the discrete white dots is not entirely known. Some are thought to be due to hyalin and fatty changes in the thrombosed microaneurysms and others to be homogeneous masses of hyalin and albuminous material surrounded by fat in the internuclear layers. Some of the latter tend to increase in numbers and coalesce and probably form the larger waxy patches seen at later stages of the retinopathy. In the condition up to this point it is rare to find ophthalmoscopically visible signs in the retinal vessels, but they are often a feature of the histology of the capillaries. Here Ballantyne found minute fat

granules in the endothelium of the capillaries and this was occasionally associated with swelling of the endothelial cells. In some cases the capillary walls appear thickened and of a hyalin nature. There has been much speculation as to the significance of the findings.

Occasionally, at this stage, in addition to the above findings ophthalmoscopically, one may see soft cotton wool like patches. These patches when seen without evidence of arterial disease probably represent a toxemia from some intercurrent infection. After removal of the toxic process they tend to disappear.²⁰

In an occasional diabetic with hypertension the fundus will show only signs of vascular hypertension and will be of no aid whatever as far as diagnosis of diabetes is concerned.¹⁰

Further changes in the retina in this condition are evidenced by changes in the veins, new formed vessels, periphlebitis, phlebosclerosis, increasing hemorrhage in the retina and vitreous, massive exudates, retinitis proliferans and retinal detachment. Ballantyne found the above changes in sixteen of 178 cases in his series of diabetic retinopathy. The above changes do not necessarily follow in sequence in diabetic retinopathy but they are always at least preceded by the formation of microaneurysms.³

The venous changes not associated with new vessel formation are characterized by, first, intermittent enlargement of the veins fairly close to the disc and usually in the principal veins. This has been described as beading or lateral knobs or buds from the veins. Also one may see overfilling and increased tortuosity of the veins which is not uniform in distribution and is limited to individual branches or segments of the veins. Yellow-white exudate may occur along the wall of some of these veins giving a sheathed appearance while others appear to be completely obliterated and the vein appears white and uniform in contour, peripheral to the thrombus. Hemorrhages may be associated with these sclerotic changes. These changes have been called phlebosclerosis because they resemble the changes in the arterioles in arteriosclerosis.⁹ Three main types of retinal phlebosclerosis have been described: (1) the intimal type with venous thrombosis and fibrosis; (2) the medial type in the wall of the vein giving dilatation and constriction of venous segments resulting in a beaded appearance as a result of hyalin changes in the media; and (3) the adventitial type where changes

occur secondary to changes outside the vein. Here a connective tissue sheathing occurs after subsidence of inflammation or edema. Ballantyne believes that the pale sheathed appearance of some of these veins is due to a fatty accumulation about the vein walls. Wagner stated that the yellow-white sheathing of some sections of veins in this condition is not explainable but believes it probably due to coagulated exudate in the perivenous spaces.

At some places in the retina where the altered dilated veins approach the surface the internal limiting membrane disappears and at these points one can see the origin of preretinal and vitreous vascular tufts.³ The new vessels have a matrix of gelatinous appearing material with them on the surface of the retina and in the retina. This process is not typical of the usual retinitis proliferans which follow hemorrhage.¹¹ It is primarily a vascular growth and the supporting matrix is a primitive tissue which may arise as a metaplasia of the tissue of the vein wall. This preretinal vascular membrane can finally become organized and contract causing deformity of the retina and retinal detachment. Hemorrhage from these new vessels is rather common in the later stages of this condition. Still later in this disease one may find cystic degeneration of the retina, secondary glaucoma, secondary cataract, cholesterol crystals in the vitreous and subretinal fluid and further increases in the sclerotic and fatty changes in the vessels.

Ballantyne found that thirty-eight of 176 diabetics with retinopathy had the so-called mixed type of retinopathy, that is, they had typical diabetic features plus changes of vascular hypertension including cotton wool patches, striate or flame shaped hemorrhages, and arterial changes. This type of retinopathy was usually seen in patients over thirty years of age who had had the disease for fifteen years or more.

There seems to be a great difference of opinion in the literature as to the value of good diabetic control in the incidence of diabetic retinopathy. Ballantyne and O'Brien felt that the one most important factor in its development was the duration of the diabetes. It was most often found in their series after ten to fifteen years of the dis-

ease, and was more often found among older patients who had had the disease this length of time. They cited examples of cases where the control had been poor and the retinopathy minimal or absent and cases where the control had been good and the retinopathy severe and concluded that poor control was not necessarily a factor in its development. During the past two years, however, Post and Strickel¹⁶ and Anderson¹ and Maumenee¹⁸ have shown that the incidence of retinopathy can be reduced and postponed by strict diabetic management. Anderson states, however, that in advanced diabetic retinopathy in the elderly patient the diabetic treatment should not be too vigorous and he should have a diet relatively high in protein to aid in repair of damaged ocular tissue.

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URGENT SURGICAL CONDITIONS IN THE NEWBORN

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IN RECENT years great progress has been made in surgical care of newborn infants. This progress has resulted from improved surgical techniques augmented by better understanding of nutrition, fluid balance and metabolism of electrolytes. The pediatric surgeon, the pediatric nurse and the pediatrician working together as a team have been able to accomplish much for babies who, not many years ago, were considered to have hopeless conditions. Prompt and accurate diagnosis is of utmost importance in infants since many of the conditions to be discussed must have immediate surgical treatment if the baby is to survive.

It is the purpose of this presentation to review the cardinal diagnostic points in a group of diseases that are now amenable to surgical correction. No effort will be made to discuss all the conditions that may at one time or another require surgical intervention nor will surgical techniques be described. No attempt has been made to include fractures and injuries to the peripheral nerves that may occur in the newborn. For convenience and simplicity the conditions will be discussed by systems.

Central Nervous System

Subdural hematoma in early life is being recognized with increasing frequency.^{9,20} It may or may not be associated with evidence of fracture of the skull or injury to the scalp. It is recognized much more frequently in the late part of infancy or the early part of childhood than in the neonatal period. However, physicians should be constantly aware of the fact that subdural hematoma may be encountered in the newborn child and that adequate treatment may prevent severe crippling deformities in later life. The frequency with which subdural hematoma is diagnosed is in direct relation to the index of suspicion on the part of the physician. In a typical case, respirations are difficult to establish soon

after birth and cyanosis is prominent. Feedings are taken poorly and vomiting, although not always present, is usually a severe problem. The vomiting usually is not projectile as contrasted with that of intestinal obstruction. Lethargy is marked and varying degrees of shock may be observed. Convulsions or twitchings may be present. Physical examination discloses a bulging or tense fontanel and perhaps irregularity of the pupils or retinal hemorrhages. The normal neurologic responses of the newborn infant are depressed or absent.

Examination of cerebrospinal fluid may be carried out but frequently it is not of great help. The presence of gross blood in the cerebrospinal fluid does not necessarily indicate subdural hematoma nor does xanthochromic fluid indicate that the hemorrhage is confined to the subdural space. Some physicians consider that lumbar puncture benefits the baby and aids in the exclusion of the possibility of hemorrhage into the nervous system. A diagnosis of subdural hematoma is established by discovery of a blood-containing cyst by means of the introduction of needles into the subdural space through the lateral margins of the anterior fontanel. This procedure is not difficult but it is best carried out by a qualified neurosurgeon. When the diagnosis of subdural hematoma has been established, frequent taps of the hematoma become necessary until fluid fails to accumulate. The great majority of subdural hematomas in the newborn infant are bilateral so that the finding of a subdural hematoma on one side indicates search for a similar lesion on the opposite side. If subdural hematomas can be evacuated completely by a series of subdural taps, improvement will be striking and prompt. Unfortunately, removal of the fluid by this relatively simple technique does not mean cure of the condition; in some cases it may be necessary for the neurosurgeon to do a more extensive procedure in which the residual sac is freed from the brain in the hope that this procedure will prevent contracture, scarring and symptoms in later life.

Hydrocephalus in the newborn baby may be so severe as to prevent delivery of a living child.

From the Section of Pediatrics, Mayo Clinic, Rochester, Minnesota.

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However, when hydrocephalus is noted in the neonatal period, when it is progressive and when the presence of subdural hematoma has been excluded, it is imperative that surgical care be considered. This does not mean that hydrocephalus can be corrected by surgical intervention, but a series of procedures that may offer a ray of hope are now under investigation. If hydrocephalus is to be corrected it must be done before extensive atrophy of the brain occurs from the increased pressure. The surgical techniques that have been devised include removal of the choroid plexus,⁷ the Seton procedure^{10,37} and various shunt operations, such as ventriculomastoidostomy²⁸ and ventriculo-ureterostomy.²⁷ In general, it is safe to say that the results of these techniques have been unsatisfactory but the outlook should not be wholly pessimistic since from these continued efforts it is hoped that some day a satisfactory method of management may be devised.

Respiratory System

Respiratory obstruction in the newborn infant may be associated with numerous lesions.²⁵ Large tumors about the nasopharynx, by virtue of their size, may prevent an adequate airway or prohibit feedings. These lesions may include ranula of the tongue, lymphangioma, hemangioma or cysts about the mouth or nasopharynx. Treatment in the individual case depends on the size, location and type of the lesion but tracheotomy may be necessary if respirations are disturbed. Congenital lesions that produce obstruction of the pharynx, larynx or trachea include hemangioma, fibroma, laryngeal polyp, cystic lesions of the larynx and congenital laryngeal relaxation (flabby larynx). In these instances tracheotomy may be a life-saving procedure.

It is well to remember that, although tracheotomy in the newborn infant may be lifesaving, it is extremely difficult to manage tracheotomy tubes in children of this age. The tube must be cleaned at frequent intervals and nursing care day and night is absolutely essential. A small rubber catheter should be attached to an apparatus that provides gentle suction to aid the attending nurse in aspiration of the tube. A small plug of mucus is enough to obstruct the tube and cause suffocation. Too vigorous aspiration of tracheotomy tubes in the newborn child results in hemorrhage which may in turn produce crusts or flecks that obstruct the tube. An atmosphere of moist oxy-

gen should be provided to aid in maintenance of liquid secretions. Efforts should be made to correct the primary difficulty as promptly as practical so the tube may be removed at the earliest possible date.

Infants who have laryngeal obstruction display an inspiratory type of stridor associated with marked retraction of the sternum, the suprasternal notch and even the supraclavicular area. Respiration may be extremely difficult and may be associated with a crowing sound. Cyanosis may or may not be present. This type of respiration persists regardless of the position in which the infant may be held. Roentgenologic examination of the thorax usually is negative. The laryngoscopist is of invaluable aid in the establishment of a definite diagnosis and the instigation of proper treatment of the primary lesion.

Choanal atresia^{6,10} is a rare cause of respiratory distress in the newborn. The normal infant resists breathing through the mouth and when forced to do so takes feedings poorly. When the posterior nasopharynx is obstructed by an atretic membrane the infant is restless and respiratory embarrassment is most marked during feedings. The diagnosis of choanal atresia is confirmed by the absence of air passing through the nostrils and the demonstration, by inability to pass a small catheter through the nose, of a membrane across the nasopharynx. Surgical correction greatly relieves the air hunger of the infant and corrects the feeding problem.

Spontaneous pneumothorax^{35,36} is an unusual condition in the neonatal period that may or may not be associated with known trauma at birth and may be the cause of severe respiratory difficulty. The degree of difficulty depends directly on the amount of air in the pleural space. In many cases spontaneous pneumothorax is so mild as to require no surgical intervention. Its diagnosis is established in an infant who has respiratory difficulty by absence of breath sounds over the affected side, accompanied by tympany to percussion. The heart and mediastinal structures are shifted away from the side in which the pneumothorax is located. This can be verified by roentgenogram of the thorax in which the collapsed lung may appear as a mass at the hilus and the normal markings of the lung are absent. Surgical measures are indicated immediately and are best carried out by introduction of a small S-shaped needle into the pleural space and main-

tenance of negative pressure by means of gentle suction. If the lung can be re-expanded and maintained in position, recovery should take place.

Closely associated with pneumothorax is pneumomediastinum⁸ or the presence of free air in the mediastinal space. Considerable air must be present before symptoms are produced but if the pneumomediastinum is extensive it may produce pressure on the mediastinal structures, which results in respiratory difficulty. Aspiration of the air should be attempted in an effort to provide a free airway. If the air can be aspirated and its reaccumulation prevented, recovery should take place.

Congenital cysts of the lung are uncommon in the neonatal period and rarely produce extreme respiratory difficulty.^{21,31} Cysts of the lung may be single or multiple, thin-walled or multiloculated, and about half of them contain fluid. They may produce respiratory difficulty by their size or they may become infected. Occasionally a cyst increases rapidly in size because of a ball-valve effect. Tension cysts produce rapidly progressive dyspnea that necessitates urgent surgical intervention. Roentgenographic examination of the thorax discloses the presence of a large thoracic lesion that obviously is displacing the other structures. On rare occasions it is extremely difficult to distinguish among pneumothorax, congenital cyst of the lung or diaphragmatic eventration by thoracic roentgenograms alone. If differentiation is difficult it may be necessary to give a small feeding of barium and watch for the presence of the intestinal pattern under the diaphragm. By this means diaphragmatic eventration and diaphragmatic hernia may be readily distinguished from pneumothorax, pneumomediastinum or congenital pulmonary cysts. Several recent articles have described the technique and indications for removal of congenital pulmonary cysts. Some of the cysts have been successfully removed in the first few days or weeks of life.^{5,12}

Respiratory obstruction may result from abnormality in the great vessels of the heart. Gross and Neuhauser¹⁷ have classified these lesions and described surgical techniques for their correction. Diagnosis of tracheal or esophageal compression by one of the so-called vascular rings is difficult and requires the help of roentgenoscopy and roentgenograms of the patient in various positions, in addition to careful auscultation of the heart. If the patient presents evidence of respiratory ob-

struction in the presence of a cardiac lesion and roentgenoscopic examination after ingestion of barium reveals compression of the esophagus, strong suspicion of a vascular abnormality should be entertained.

Congenital diaphragmatic hernia may produce gastrointestinal, respiratory or circulatory symptoms.¹³ Diaphragmatic hernias are more common on the left side than on the right. They result from failure of the developing diaphragm to close the normal embryologic channels between the abdominal and pleural cavities. Defects in the pleuroperitoneal fold result in herniation of various abdominal viscera into the thoracic cavity. This results in collapse of the lung on the affected side. Infants who have large diaphragmatic hernias are cyanotic soon after birth. If the hernia is small, intestinal distention may be enough to result in collapse of the lung and cyanosis after feedings are started. Vomiting, although not always present, is common and begins soon after the first feeding. On physical examination it is noted that the side in which the hernia is located has decreased excursions and on careful auscultation intestinal sounds may be heard over the thorax. The heart and mediastinal structures are displaced by the hernia and the collapsed lung. Roentgenographic examination of the thorax after ingestion of barium establishes the diagnosis. Diaphragmatic hernia is a serious condition in the newborn infant; when it is accompanied by cyanosis, feeding difficulty or circulatory changes, surgical intervention is indicated. These infants should undergo operation as soon after birth as the diagnosis is established since the longer the operation is delayed the greater will be the tendency to gaseous distention in the gastrointestinal tract, which adds to the technical difficulty of operation. In the hands of experienced surgeons the results of corrective procedures have been extremely good.

Diaphragmatic eventration² is a congenital malformation, usually on the left side, characterized by thinning and marked elevation of the diaphragm so that it fails to function in respiration. This condition may produce dyspnea and cyanosis and is amenable to operation, which usually is not so urgent as in the case of diaphragmatic hernia. If the infant can be maintained in good condition by the use of supportive measures, operation may be delayed until the infant is considerably larger. On the other hand if the infant is having respiratory difficulty and maintenance by the use of oxy-

gen and other supportive measures is difficult, surgical intervention should be carried out without delay.

Gastrointestinal System

Many lesions for which emergency surgical treatment is indicated are found in the gastrointestinal tract during the period just after birth.

Congenital atresia of the esophagus is commonly found at the level of the bifurcation of the trachea and is associated in a great majority of cases with a fistulous connection between the upper end of the distal part of the esophagus and the bifurcation of the trachea.^{3,4,22,24,29,30} The diagnosis of atresia of the esophagus should be suspected in all infants who have difficult respiration, excessive mucus in the mouth and throat and attacks of cyanosis during the first few hours of life. Feeding results in immediate exaggeration of the respiratory distress. Once the condition is suspected, the insertion of a small soft rubber catheter into the esophagus confirms the presence of obstruction. A few cubic centimeters of radiopaque oil introduced through the catheter outlines the blind end of the esophagus and the fistula on the thoracic roentgenogram. In the presence of esophageal atresia without tracheo-esophageal fistula, no air is present in the gastrointestinal tract. Esophageal atresia is frequently associated with other abnormalities. The esophageal obstruction causes saliva to spill directly into the trachea, with resultant pneumonia or atelectasis. It is imperative that continuous or almost continuous aspiration of the esophageal pouch be carried out to prevent death from aspiration pneumonitis. When the diagnosis has been established, operation offers the only hope for recovery. The prognosis in esophageal atresia depends on a number of factors, including the amount of pneumonitis, the type of abnormality, the age and weight of the infant and the experience of the surgeon. In recently reported cases, the mortality rate has improved rapidly with increased experience in the management of these patients.^{4,22}

Atresias of the gastrointestinal tract may occur at any location.²³ These lesions produce complete intestinal obstruction and are associated with vomiting that begins soon after birth. The rapidity of onset of vomiting is an indication of the location of the obstruction. Obstruction in the upper part of the gastrointestinal tract produces early vomiting with relatively little abdominal disten-

tion, while obstruction in the lower part produces marked abdominal distention, with vomiting that occurs later, after feedings are started. The vomiting of intestinal obstruction is projectile and persistent in contrast to the spitting or regurgitation commonly observed in infants who have poorly regulated feedings. Extreme dehydration and loss of weight are associated with any type of intestinal obstruction. In the presence of complete intestinal obstruction the infant passes little or no stool. The stool consists of dark meconium that fails to show cornified epithelial cells or lanugo hair on microscopic examination. Intestinal patterns soon develop on the abdominal wall and distention is progressive. If intestinal obstruction as the result of atresia or any other cause is suspected barium should not be given. A scout (preliminary survey) film of the abdomen confirms the presence of intestinal obstruction and frequently aids in the localization of the site of obstruction. Once the diagnosis of intestinal atresia is established efforts should be made to carry out surgical correction at the earliest possible moment. Infants withstand surgical procedures better during the first few hours after birth than during the next few days or weeks. If the obstruction is not relieved within a few days abdominal distention becomes marked, regulation of fluid and electrolytes is made difficult and perforation with generalized peritonitis and death results. The type of operation that is necessary depends on the findings at the time of exploration. More than one region of atresia may be present or other congenital anomalies may be found. The mortality rate after surgical intervention for intestinal atresia is high, perhaps 50 per cent, but many of the deaths result from conditions not related to the atresia.

Intestinal stenosis is an uncommon type of lesion of the gastrointestinal tract that may produce partial or complete intestinal obstruction. If obstruction is complete, the clinical picture cannot be distinguished from that of intestinal atresia. Partial intestinal obstruction as a result of congenital stenosis is rare in the newborn.

Intestinal obstruction in the newborn infant may be associated with numerous lesions, such as malrotation, intussusception,³² volvulus, meconium ileus,³⁴ reduplications¹⁵ or functional obstruction.⁴¹ In such cases it is frequently difficult or impossible to distinguish between these lesions before operation. Little indication exists for delay in an effort to establish the exact type of obstruc-

tion since surgical treatment is indicated in any case.

Meconium ileus is a condition associated with cystic fibrosis of the pancreas, now named "mucoviscidosis" by some authors. The absence of pancreatic enzymes results in the meconium being extremely thick and tenacious, so that it cannot be passed through the gastrointestinal tract. This condition frequently is associated with volvulus, perforation or other lesions of the gastrointestinal tract. If the condition is suspected because of the familial incidence of the disease, a small specimen of stool obtained before operation may be suspended in a 5 per cent solution of pancreatin.¹¹ The tenacious meconium of patients who have pancreatic fibrosis rapidly dissolves in this solution. At the time of operation it may be necessary to use the method of Hiatt and Wilson¹⁸ to relieve the obstruction. These observers were able to relieve the intestinal obstruction of meconium ileus by irrigating the obstructed portion of the bowel with isotonic solution of sodium chloride through a small catheter at the time of exploration. When the obstruction has been relieved the prognosis remains poor since the infants later die from severe pulmonary disease.

Anal atresia or imperforate anus is usually diagnosed by inspection; it causes progressive abdominal distention, vomiting, dehydration and absence of stools. This condition is frequently associated with congenital malformation of the genitourinary system; stool may pass into the bladder, vagina, perineum or ureters. Surgical correction must be carried out as soon as possible. An accurate diagnosis as to the location of the obstruction may be obtained by the technique of Wangenstein and Rice.³⁰ A small lead marker is taped over the anal dimple and a roentgenogram is made with the baby suspended by his feet. On rare occasions the connection between the rectum and the bladder, vagina or perineum may be sufficiently large to justify dilatation of this sinus tract so that it may serve as an anus until more definitive surgical treatment may be carried out. The decision as to the type of operative procedure must rest with the judgment of the surgeon in each case.

Hypertrophic pyloric stenosis is a common condition in newborn infants. It usually occurs in males and frequently is encountered in the first-born child. It is associated with gradually increasing thickening of the pyloric sphincter and is characterized clinically by vomiting, a palpable

tumor in the region of the duodenal bulb, presence of peristaltic waves, loss of weight, infrequent stools and disturbance in electrolytes if the condition remains uncorrected. Operation results in prompt improvement and should not be delayed beyond the time necessary for preparation.

Omphalocele or umbilical hernia is a congenital malformation characterized by herniation of abdominal contents into the umbilical cord.²⁸ The structure is covered by a translucent membrane of peritoneum and amniotic membrane. This covering may rupture at the time of delivery, which results in eventration and peritonitis. If the omphalocele is not covered within a few hours after birth it will dry out, become infected and rupture, with production of fatal peritonitis. Surgical correction should be attempted as soon after birth as possible. If the omphalocele is large and its contents cannot be returned to the abdominal cavity, skin should be approximated over the defect and secondary repair of the umbilical hernia done at a later date. Welch⁴⁰ has recommended the use of isografts to protect the thin-walled sac against infection. The mortality rate depends on the size of the omphalocele, the contents of the sac and the ease with which the contents may be returned to the abdominal cavity. Under ordinary circumstances a 50 per cent survival rate after operation should be expected.

Urinary System

Congenital malformations of the urinary system are quite common but rarely are an indication for emergency operation in the newborn.

Neoplasms

Neoplasms are rare in the newborn infant. Wilms' tumors,¹⁶ teratomas,^{14,22,23} neuroblastomas, medulloblastomas, sarcomas¹ and others have been described. If a neoplasm is found in infancy the same indications for surgical intervention exist as in later life.

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PATIENT INSTRUCTION IN TUBERCULOSIS

Provision for individual patient instruction in the significance of asymptomatic tuberculous lesions of small extent, or indeed of all inactive or suspected tuberculosis, is a great need which has grown out of mass survey

examinations. This can be provided only by giving both clinic physicians and nurses the time to give each patient the full explanation he deserves.—HOWARD M. PAYNE, M.D., PHILIP ENTERLINE, and JULIA HEUCK, *The American Review of Tuberculosis*, November, 1952.

DERMATITIS FROM INDUSTRIAL OILS AND CHROMATES

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THIS DISCUSSION of dermatitis caused by oils will be a brief review of what little information has appeared in medical literature, a discussion of some of the known causative factors, a smattering of histopathology of the lesions, a report of a few of my cases, especially as related to the railroad industry, and will pose a great many problems for future study.

In most of the standard textbooks there is a sentence to the effect that industrial dermatitis is an entity, followed by a list of chemicals and the type of eruption usually produced by each, a statement that avoidance of the irritant usually allows healing to take place and that re-exposure will cause recurrence of the eruption, but no fundamental information about the disease.

One of the first good accounts appeared about 1918, written about munition workers; the article might well have been written in 1951. It described the eruption exactly as we see it now, and gave about the same advice. Schwartz and Tulipan in "Occupational Diseases of the Skin" list petroleum, oils, tar, paraffins and halogen containing oils, cutting oils, sulphonated oils and some of the specific plant oils, tung, mustard, et cetera. There is no mention of the fundamental pathology. The first concise and easily understandable information comes in the Manual of Dermatology by Donald Pillsbury, printed for the use of the Army and Navy in 1942. In 1946 Klauder and Hardy produced a study of 532 cases of occupational dermatitis gleaned in 1,184 cases of skin diseases in industrial patients presenting claims for compensation, of which only 11 per cent were related to oils.

Our problem today, therefore, is to summarize the existing information on dermatitis due to oils. Solvents cause the largest number of cases of dermatitis which are due to a primary irritant. A primary irritant is a substance which is capable of producing a reaction in the skin of a majority of subjects who never have been previously exposed to the specific agent. The commonest ir-

ritants are the light petroleum solvents, especially type wash, mineral oil, kerosene and gasoline. Chlorinated hydrocarbons, turpentine, and solvents derived from coal tar follow closely but less frequently. The irritant action is directly proportional to the boiling range, and inversely proportional to the defatting action. Kerosene and solvents of low boiling range uniformly exert irritant action. Solvents containing compounds of chromium and sulfuric acid frequently cause eczematous reaction. Particularly we should mention the role of trauma in predisposing the dermatologic complications of injury. Apparently the skin can tolerate a certain exposure to these irritants, but when injured, cannot tolerate the usual exposure and provides a focus for the onset of dermatitis.

Of the eruptions usually seen in relation to contact with oil, the acneform types predominate. The first sign is the appearance of black dots or comedones in the follicles. A conical papule with a horny plug appears, followed by a tiny ring of inflammatory reaction and it soon turns into a pustule. Very little material can be expressed from the pustule, and healing is slow. Occasionally the pustule is large enough to be called a furuncle and when many are grouped in one area, the result may be incapacitating. The sites of predilection of these lesions are roughly located where there is heavy, coarse hair in an area exposed to friction: nape and sides of neck, forearms, anterior thighs, scrotum, calves. In my experience the reddish or sandy haired people are most susceptible but certain dark skinned workers have been seen. These, as I remember them, were handicapped by low intellect, and/or language difficulties.

In Montana we have another complicating factor that may not be seen in other areas. Most of our younger workers who are exposed to dirt and oils like to wear denim jeans. The popular style in Montana is the skin-tight cowboy jeans, which fit snugly over the buttocks, thighs and calves. When these jeans are thoroughly impregnated with the offending oil, a mild folliculitis commonly appears in these areas. I have never seen it severe enough to be called furunculosis, but have

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occasionally had to warn the patient to avoid grease, and to wear clean jeans.

Until O'Brien from Australia produced his classic article in the *Journal of Investigative Dermatology* in August, 1950, there had been no definitive study of the pathology of oil folliculitis. His study was directed chiefly to the etiology of poral closure, but inevitably his attention was called to the pilosebaceous follicles. He applied cotton pads moistened in kerosene to a test area on one side of the abdomen for fifteen minutes each day. The other side of the abdomen was treated in the same way except that the kerosene had been presaturated with anhydrous lanolin. After three days the test area showed the first elements of a rash composed of small clear superficial vesicles on a red base. After five more days during which only one more treatment was given, the rash became more florid, more infiltrated, and more like miliaria. Biopsies were taken from the test and control areas. In only one instance of thirty experiments was any rash produced on the control side; it was of a macular type. He made 600 serial sections from five biopsies. Three biopsies were from test areas, and two from control areas. The sections suggested that the solvent penetrated through the pilosebaceous opening causing an intense inflammatory reaction with internal and external infiltration of the follicle. Neutrophiles, monocytes and lymphocytes distended and infiltrated the neck of the follicle. Parakeratosis in the area surrounding the opening of the follicle occluded it. It seemed to show that the lipid solvent caused intercellular edema and vesicle formation with subsequent infiltration and follicle plugging. However, the amount of irritation and reaction depends upon the properties of the chemical used. Kerosene which was saturated with anhydrous lanolin caused little or no reaction.

It is to be emphasized here that complicating factors of staphylococcal contamination, and low personal hygiene may prolong and aggravate the oil folliculitis. Other factors including improper attempts at treatment, previously existing dermatoses such as atopic or nummular eczema, psoriasis, lichen planus, acne vulgaris, or co-existing dermatitis venenata may confuse the issue.

O'Brien also experimented with soaping the normal skin with the ordinary brands of toilet soap. The histopathologic picture was the same as

the areas treated with kerosene, but to a much less violent degree.

In summary we can say that persistent exposure to low boiling range solvents with a high defatting action, and over-exposure to the defatting action of any soap and particularly the alkaline detergents will cause a direct action upon the pilosebaceous apparatus with poral closure and folliculitis.

Treatment of the eruption, once it appears, should be directed in a logical fashion at the diametric opposite of the cause. The area should be cleansed of offending substances once, thoroughly, by a neutral or slightly acid detergent. Antibiotics may be used parenterally to combat the secondary infection that usually complicates the original eruption. In severe cases wet compresses with Burow's solution diluted 1:16, half saturated solution of boric acid, or even plain water, may be used. Removal of the patient from the offending substances, or vice versa, is necessary until the skin is well. Time is required to heal these follicular reactions—at least two and frequently four weeks. In the hands of the dermatologist, small doses of x-ray therapy seem to shorten the period of disability, but x-ray must be given only by those familiar with its use, and with machines designed for superficial dermatologic therapy. In general, one should avoid applications of any ointment to the affected areas, though exceptions to this statement may occur.

When the patient returns to work, the offending agents must be avoided. Clean clothing, gloves, different detergents, and different solvents may make the entire difference between an efficient workman and one who is half-sick. In the workman whose cerebration is too slow to think through the problem, an attempt must be made to remove the offending substances completely from his use, or transfer must be made to another department.

In reporting my own experience with industrial dermatitis at Doctor Webb's request, particularly as far as the Great Northern Railway is concerned, I have had small material to report. Except for exposure to poison ivy, relatively few patients have come to my attention. Only three have been major problems. The *first*, a man with limited understanding of our language and ability to follow directions, as well as having a low level

(Continued on Page 92)

CORONARY INSUFFICIENCY

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WHEN the cardiac muscle receives an inadequate supply of oxygen, pain and usually, but not always, electrocardiographic changes result, and the condition is called coronary insufficiency. This state of affairs may be either relative or absolute. The term "relative coronary insufficiency" is reserved for myocardial hypoxia occurring despite patent coronary arteries and is due to insufficient blood or deficient blood reaching the normal coronary arteries.

Shock, with its lowered blood pressure decreasing the coronary flow, and severe anemias, with the oxygen content of the blood lowered, cause only minor cardiac symptoms as compared to the severity of the primary condition. Hyperthyroidism, on the other hand, with its increased metabolic rate, hypertension, and elevated pulse rate, may actually cause a cardiac failure, and any resultant myocardial damage can be blamed chiefly on an insufficient supply of oxygen to the muscle fibers.

The presenting symptoms in paroxysmal tachycardia may be angina. The very rapid ventricular rhythm in paroxysmal tachycardia demands an increased coronary flow, but the coronary flow is actually decreased because of the shortened filling time of the nutrient arteries. As the tachycardia continues, anginal pain becomes a dominant symptom, and S-T changes in the electrocardiogram, typical of myocardial damage, occur.

These examples of relative coronary insufficiency are reversible when the primary disease is corrected.

In absolute coronary insufficiency the quality of the blood reaching the nutrient arteries is normal but the arteries are too narrow to deliver an adequate supply. Aside from the rare luetic aortitis causing narrowing of the coronary ostia, the chief cause of absolute coronary insufficiency is atherosclerosis.

Factors of etiological importance in the development of atherosclerosis are:

1. *Age*.—During the first year of life thickening of the intima of the coronary arteries is al-

ready apparent and this continues with age but causes little if any narrowing of the lumina.² Yellow lipid deposits in the intima are found in 95 per cent of children over six months of age. These atheromatous patches increase in the first twenty years of life and in the following several decades decrease in size and number.⁴ These anatomical changes appear to be reversible and could be due to the increased cholesterol intake and/or the poorly developed cholesterol metabolism in children. It is important to note that one third of the people over the age of eighty show only minimal arteriosclerosis. Therefore this disease must not be considered inevitable with advancing years.³

2. *Hypertension*.—As a general rule, the higher the arterial pressure the faster the atherosclerosis develops. Wherever the pressure is the highest in any given individual the more marked the degenerative changes will be. Thus in the arch of the aorta and in the vessels of the lower extremities degenerative changes are more marked. Atherosclerosis in the pulmonary circulation is rare until the pressure is raised as in emphysema, mitral stenosis and pulmonary fibrosis. When a cirrhotic liver raises the pressure in the portal systems, sclerosis of the portal veins is common. As a rule, therefore, all other factors being equal, the patient with hypertension will have more coronary sclerosis.

3. *Congenital or Inherited Tendency*.—At advanced age the hereditary element in coronary disease is lacking but when the condition is found before the age of fifty, a family history is usually obtainable.¹³ In one-third of the adult population the right and left coronary arteries are of equal size and in this group coronary disease is minimal. In 50 per cent of the cases the right coronary artery is preponderant and in one-sixth of the cases the left artery is the larger, and it is in this latter group that we have the poorest prognosis in relation to coronary deaths. If the preponderant vessel is occluded the remaining hypoplastic artery is often incapable of compensating for the closed vessel.¹⁶ The relative size of the coronary vessels is controlled by hereditary factors. Faulty

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cholesterol metabolism is an etiological factor in possibly all cases of atherosclerosis and certainly is a defect in premature sclerosis and should be considered as a congenital defect.

4. *Sex*.—Coronary disease occurs five times as frequently in men as in women.¹¹ Under the age of forty the ratio of incidence is twenty men to one woman.⁵ There must be some hormonal influence that protects the arteries in women against the invasion of cholesterol and the resulting atherosclerosis. Women do not develop the disease even during the recurring high cholesterol levels of pregnancy.¹⁰

5. *Constitutional Factors*.—The male who has a tendency towards female structure, namely wide hips, lack of body hair, and only moderate muscular development, seems to have a much lower incidence of coronary disease. In comparison the barrel chested hairy male with narrow hips, massive muscles, and thick forearms is prone to atherosclerosis. This man looks older than his chronological age.¹² Here again the relation of the androgenic to the estrogenic hormones would appear to be of vital importance. A relatively high ratio of androgenic hormones over the estrogens would appear to be conducive to atherosclerosis.

6. *Cholesterol Metabolism*.—There is a higher incidence of coronary disease wherever there is a disease causing hypercholesteremia, such as severe nephrosis, uncontrolled diabetes, hereditary xanthomatosis, myxedema, and Cushing's syndrome. The incidence of atherosclerosis in experimental animals fed in high cholesterol diet is well known. Deaths due to atherosclerosis decreased in Sweden during the economic depression of 1930 and during the war years, and was attributed to the high starch low fat diet. Atherosclerosis is uncommon in patients in wasting diseases such as starvation in carcinomatosis. In a study entitled "Resorption of Arterial Atheromatous Deposits in Wasting Disease," Wilens concludes: "It seems that their atherosclerotic deposits had been resorbed and their atherosclerosis had been a reversible process."¹⁸ The importance of a high fat diet as an important etiological factor in atherosclerosis is still debatable but the stakes are high and the works and opinions of Goffman, Katz,² Boas and others, and the data of insurance companies^{1,14} cannot be ignored.

The chief criticism of a low cholesterol diet in a given individual has been that some coronary patients show a low blood cholesterol, and if the cholesterolemia is high it often shows little or no reduction on a strict dietary regime. Goffman has stated that large lipo-protein molecules are found always in those patients with atherosclerosis and with weight reduction the number of these fat molecules decrease in the blood.⁶

Tobacco, alcohol, hard physical work, and the stress of living have not been proven to cause atherosclerosis. Physicians have long liked to think that the stress of their particular occupation has made them especially susceptible to early coronary disease. This has not been substantiated by recent studies.¹⁰

In the past few years the length of life after the diagnosis of coronary disease has increased because of improved treatment and earlier diagnosis. The chief symptom in the early coronary patient is often anxiety. To allay this anxiety, the doctor himself must be convinced that an optimistic outlook is justified.

The only treatment of value is prevention of the atherosclerosis before the artery becomes narrowed. Weight reduction is imperative and as the patient restricts his dietary intake he can be gradually trained to lower the fat content in his diet. Diabetics must be rigidly controlled with a rather liberal carbohydrate intake of at least 150 to 250 gm. and a low fat intake. No diabetic can be adequately controlled without two to three urine tests per day and the insulin dosage adjusted to these tests. Increased exercise in the controlled diabetic calls for less insulin, but exertion in the uncontrolled patient demands a larger dosage of insulin. The well-controlled diabetic contemplating a golf game or a hunting expedition should take less insulin and carry candy. There is an increase in statistical proof that adequate diabetic management decreases the incidence of arterial disease.^{9,15,17}

Hypertension must be treated but great care must be exercised in the use of the new miracle drugs such as Hexamethonium, because the sudden dramatic lowering of the blood pressure and the ensuing prolonged sudden cardiac ischemia may cause infarction. The patient may need a high systolic pressure to maintain adequate coronary flow. Although anxiety in itself does not cause or aggravate atherosclerosis, it is of importance if it elevates the blood pressure.

The activities required in the normal processes of daily living are all that are required for good health. Exercise over and above these minimal daily requirements in no way improve the general health. The coronary patient must be warned to limit his exercise below the threshold of anginal pain. If simple functions such as climbing stairs bring on pain, nitroglycerine should be used before this exercise.

The barrel chested male in the fifth decade of life who is becoming obese and carries a high diastolic pressure will often be found with a hemoglobin well over 100 per cent and a very low sedimentation rate. This is the patient that could well have a decrease in clotting time and be susceptible to intra-arterial thrombosis and should be encouraged to be a blood donor as often as possible. It could well be psychological, but these patients often admit to a sense of well being when the mild secondary polycythemia is relieved by phlebotomy.

There is no convincing proof that gallbladder disease or peptic ulcer occur more frequently in the coronary patient than in the otherwise normal individual. Gallbladder disfunction and distress from hyperacidity or ulcer seems to precipitate anginal attacks, and these two conditions must be remedied in coronary disease even if surgery is necessary.

The pain, usually nocturnal or following heavy meals, of diaphragmatic hernia must not be confused with coronary pain.

The only drugs of value in treating coronary insufficiency are sedatives and nitroglycerine. Each year a list of new drugs becomes available but are usually quickly discarded. Aminophyllin and papaverine are two of the most commonly used drugs and have no proven value except for the phenobarbital that is usually incorporated with these drugs. Nitroglycerine, freshly prepared, should be used liberally and the patient encouraged to rely on it at the slightest indication.

Conclusions

Coronary insufficiency is the result of narrowing of the coronary arteries because of athero-

sclerosis. The disease occurs as the patient ages and is apparently due to faulty cholesterol metabolism, the fault apparently being a congenital defect markedly affected by the androgen-estrogen ratio, and aggravated by hypertension and all diseases and dietary indiscretions causing hypercholesterolemia. Treatment consists of control of conditions causing hypercholesterolemia, rigid weight control, and relief of pain with nitroglycerine.

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DISTURBANCES OF THE THYROID OTHER THAN HYPERTHYROIDISM

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INDICATIONS for the operative treatment of goiter, besides that of hyperfunction, are the removal of adenomata to improve the appearance of the neck, the relief of symptoms of tracheal compression caused by simple nodular goiters, as well as the prophylaxis and cure of malignancy and other pathological changes. Consideration should be given to the esthetic aspect of the disease raised by the patient, since a goiter which is unsightly is nearly always clinical as well. It very often involves the trachea and large blood vessels of the neck with harmful effects on the patient. Changes in size or contour of the thyroid gland causing cosmetic disturbances or pressure on the recurrent laryngeal nerves or those resulting in substernal and intrathoracic projections of gland tissue, are, as a rule, readily diagnosed and their treatment is just as readily indicated. In this type of case roentgenographic as well as laryngoscopic examination are of considerable importance in the preoperative management and in the surgical treatment of the disease. It has been estimated that in instances in which the goiter has produced symptoms of a mechanical nature, damage results to one or the other of the vocal cords in about 5 per cent of cases.

There are some conditions, namely, chronic thyroiditis of Riedel's struma, tuberculosis and sudden hemorrhage into a benign adenoma, which are often confused with malignant tumors of the thyroid. A correct preoperative diagnosis is most important in the surgical management of these patients.

In the differential diagnosis, the most noteworthy, although rare, is the so-called Riedel's struma, or woody thyroiditis. The etiology of this disease has been variously ascribed to tuberculosis, syphilis, and other types of chronic inflammation, but no convincing evidence of any of these factors has been presented. In this disease, the gland is so hard that its consistency has been described as stony or iron-like. However, its contour is smooth and rounded, the normal shape of the gland is retained, there is no hoarseness and there is little or no fixation of the gland to surrounding structures. There is no evidence of extension to regional

nodes and distant organs. Malignant tumors are usually nodular and unilateral, they frequently metastasize early and soon involve the recurrent laryngeal nerves so that hoarseness and dyspnea are relatively common symptoms. The indications for surgical removal of the gland affected by woody thyroiditis consist mainly of pressure symptoms such as dyspnea and dysphagia. When surgery is undertaken for this disease it should, if possible, be limited to partial resection of the gland, since, as a rule, very little functioning gland tissue is left and myxedema may result. Late in the disease myxedema is common but this may be controlled satisfactorily by the oral administration of thyroid gland substance.

Tuberculosis of the thyroid, while extremely rare and of little clinical importance, is occasionally confused with malignancy. It has been noted that tuberculosis occurs frequently in association with increased functional activity of the gland already involved with hyperthyroidism. Whether the hypertrophic gland is rendered more susceptible to invasion by the bacillus of tuberculosis, or whether the infection stimulates the parenchyma to abnormal activity resulting in hyperthyroidism has not been determined. The disease is most frequently a part of a generalized tuberculosis or secondary to tuberculous infection elsewhere in the body. The result may either be a frank abscess formation or a chronically inflamed fibrotic mass. Microscopically, the latter type shows tubercles intra or interfollicularly. The surgical treatment is incision of the abscess or lobectomy, depending upon the condition encountered, and the prognosis is excellent.

In most cases of hemorrhage into a thyroid adenoma the history gives a correct diagnosis. Whether the patient had previously noted a goiter or not, the thyroid suddenly increases in size. This swelling, of a rapid onset, is associated with marked local tenderness and occasionally by symptoms of choking and pressure in the neck. Because the tumor following hemorrhage usually tends to subside over a period of a few days or weeks, it is readily differentiated from malignancy.

Malignant tumors of the thyroid are not ex-

tremely rare since the statistical studies show that from 3 to 17 per cent of all nodular growths in this gland are carcinoma. The greatest hope of cure of malignant lesions of the thyroid lies in the prophylactic removal of adenomas. The usually quoted textbook symptoms of cancer of the thyroid are really those of the end stages of the disease. A rapidly growing goiter with irregular lobulation distorting the usual symmetrical shape of the thyroid gland is rarely present until the condition is hopeless.

According to most investigators malignancy of the thyroid arises in about 90 per cent of the cases in a pre-existing nodular goiter usually in an individual in the fifth or sixth decade. As long as the growth remains inside the capsule, no symptoms are produced, so the exact time at which the malignancy begins cannot be determined. The goiterous enlargement is occasionally the only symptoms of which the patient is aware. Pressure on the recurrent laryngeal nerve or direct extension of the growth into the trachea results in hoarseness and cough, and if the esophagus is encroached upon, dysphagia is present. Hoarseness is a significant symptom since it usually means that the tumor has broken through the capsule and that the nerve is actually invaded or pressed upon. In non-malignant tumors of the neck, involvement of the recurrent laryngeal nerve is very rare.

The question of the possibility of carcinomatous lesions of the thyroid producing hyperthyroidism has not been completely settled although Pemberton states that this condition practically never takes place. When there is enlargement of the gland with hyperthyroidism, malignancy is rare, although in Pemberton's series, 87 per cent of the cases of malignancy were associated with benign nodules elsewhere in the gland. It is these benign adenomas which are most likely the cause of hyperthyroidism. In many instances operations are undertaken for supposedly benign adenomatous goiters only to find, by immediate microscopic examination or recurrence of the lesion at a later date, that the neoplastic change had already taken place. Needless to say, it is in these cases that are not diagnosed clinically that the best results may be expected. In early cases in which the carcinoma is confined within the capsule, removal of all of the growth without rupture of the capsule is sufficient. After malignancy has been diagnosed, the treatment of choice is radical re-

section, and, if this is impossible, irradiation alone or combined with surgical removal is strongly indicated. It may be stated that surgery alone in this condition is usually not justifiable even if the malignant lesion is entirely removed, although in many instances, radical resection has proved satisfactory. The latter is especially true of the papillary adeno-carcinomata, which grow slowly, and tend to remain encapsulated for a long time. In the more malignant types, radio-therapy certainly offers additional protection against the extension of the disease. Tracheotomy is frequently necessary, especially in the late stages of the disease, as a palliative measure.

The prognosis of carcinoma of the thyroid has been shown by Pemberton and Fricke and others to be as good as that of similar lesions of any other organ with the exception of the lip and the skin.

The management of the patient with hyperthyroidism does not come within the scope of this discussion. However, the clinician should keep in mind some practical facts concerning diagnosis and treatment. He should know that the rapid pulse comes early in hyperthyroidism and that it is more dependable as a diagnostic factor than the basal metabolic rate. He should remember that a high basal metabolic reading is not compatible with a slow or moderately elevated pulse. He must not forget that it is much safer to operate upon a patient with hyperthyroidism who is gaining weight than the one who is losing weight with the same basal metabolic reading. In other words, operation should only be attempted for the treatment of hyperthyroidism during a recession. He must be conscious of the fact that with the intelligent use of anti-thyroid drugs in the preparation of the patient, surgery is still the most valuable agent at hand, since it cures about 75 per cent of the patients with Grave's disease.

Roentgenotherapy has frequently been suggested in the treatment of hyperthyroidism. While it is admitted that in a large number of cases treated by x-ray, there is a gradual diminution in the basal metabolic rate and a general improvement of the patient, radiotherapeutic methods have several serious drawbacks. The dosage is difficult to determine. The favorable result in the beginning may, due to the cumulative action of the x-rays, eventually prove to be excessive. This treatment has none of the precision of the operative treatment. Further, radiotherapy is contra-

indicated in those cases of goiter, which sooner or later, come to operation. The inherent difficulties of an operation for exophthalmic goiter are increased to such an extent by preliminary x-ray treatment as to render the operation almost impossible. The adhesions after x-ray treatment are only to be compared in many cases to those produced by previous thyroidectomy in exophthalmic goiter and usually they are more marked. Further, a most important objection to x-ray treatment is the fact that visceral damage continues to advance while the gland is being treated and, in many instances, reaches a dangerous degree before it can be controlled.

In spite of the benefits of surgery in toxic goiter, recurrence of toxicity as well as persistence of symptoms occur in about 5 per cent of cases. The cause of recurrent symptoms following operation for exophthalmic goiter has not been fully explained. Various theories, as well as carefully conducted studies along this line, have been reported, but as yet no satisfactory reasons have been established as to why, in an occasional instance, recurrence of hyperthyroidism takes place at varying intervals following thyroidectomy. It is true that in many cases the cause of recurrence of the goiter can be definitely traced to incomplete removal of the gland, such as in hemithyroidectomy or in instances in which retrotracheal extensions are overlooked. Yet, there remains a certain definite group of patients in whom minimal amounts of gland tissue are preserved and return of symptoms is noted.

Classification of these recurrences, therefore, can readily be made on the basis of whether the previous removal of the gland was adequate or inadequate and, of course, the proper treatment in the latter type of case is prophylaxis. This consists in a thorough removal of the gland, including the isthmus and also the pyramidal lobe, if present, leaving only a thin layer on the posterior

capsule and taking care to locate and resect any retrotracheal extensions. This procedure will prevent most, but not all, recurrences, and it is in this latter type of case that one cannot attribute a return of the goiter to inadequate or incomplete surgery.

In only a few cases a partial return of some of the signs of hyperthyroidism is present and it is in these cases especially that therapeutic measures fail. In a certain group of cases, exophthalmos, frequently hardly noticeable preoperatively, becomes more and more progressive following removal of the gland so that permanent damage seems a likely factor in the production of these changes. The pathologic change responsible for this condition, as determined by Maffziger and Jones, is of mechanical origin, and, as described by them, is the result of pronounced swelling of the extra-ocular muscles to from three to eight times their normal size. They recommend, for these cases of progressive exophthalmos following thyroidectomy, removal of the roofs of the orbit through bilateral frontal bone flaps. X-ray treatment to the pituitary has proved most effective in the treatment of this condition.

Injury to the recurrent laryngeal nerves takes place most frequently in those patients in whom secondary operations are necessary. This is due to the fact that anatomical relations have become distorted through scar formation, resulting in displacement of the nerve into positions which are particularly susceptible to injury. This type of case again lends itself especially well to the performance of preliminary ligation of the inferior arteries and in the author's experience has given particularly gratifying results.

Postoperative hemorrhage which takes place in 1 or 2 per cent of even the most carefully done thyroidectomies, has occurred in our experience once. Good hemastases at time of surgery will prevent this complication.

CONTROL OF TUBERCULOSIS

Vast changes have taken place in our understanding of tuberculosis, the methods of its control and treatment, and the possibility of its ultimate eradication. As far back as 1937, Dr. Wade Frost demonstrated epidemiologically that this possibility could be made a reality

even with the public health control methods then available, provided we intensified our efforts sufficiently. The goal is still distant, but new methods and discoveries give us courage to pursue it still more energetically.—KENDALL EMERSON, M.D., *Connecticut State Medical Journal*, May, 1952.

Laboratory Aids to Medical Practice

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The Minnesota Society of Clinical Pathologists

FATAL ENTEROTOXIC REACTIONS CAUSED BY ANTIBIOTIC THERAPY

DURING the past year published reports have appeared concerning a hitherto unrecognized complication of antibiotic therapy, namely, a severe or even fatal micrococcal (staphylococcal) enterotoxemia that is caused by administration of terramycin or aureomycin. Practically all of these reports have appeared in France. This important sequela of therapy with antibiotics of broad spectrum was brought to the attention of the Minnesota Society of Clinical Pathologists by Dr. P. T. Sloss, a fellow in Pathology of the Mayo Foundation for Medical Education and Research, at a recent meeting of the Society. Because of the timeliness of Dr. Sloss's presentation and because of the widespread use of such antibiotics, together with the potential dangers involved in this little-known reaction, it was deemed advisable to present this information to the medical profession of Minnesota.

Mechanism

This serious complication of either prophylactic or therapeutic use of aureomycin and terramycin is not caused by hypersensitivity to the agents on the part of the patient but is produced by the effect of these antibiotics on normal fecal flora. Most of the fecal bacteria consist of organisms of the *Escherichia coli-aerogenes* group, together with groups represented by *Bacteroides*, *Clostridium* and *Proteus*. In minor numbers are found *Pseudomonas*, yeasts, enterococci and saprophytic micrococci.

When terramycin or aureomycin is given, a decrease in the total number of bacteria in the intestinal tract occurs during the first few hours; no great qualitative changes are noted, however. After the first few hours, important changes occur. *Escherichia coli* rapidly decreases in number and becomes practically absent by the fourth day after onset of antibiotic therapy. Organisms of the *Proteus* group, which are usually resistant to ordinary amounts of terramycin or aureomycin, increase in a reciprocal fashion. This in-

crease becomes extremely rapid by the end of the fourth day, after which *Proteus* is predominant in the stool. Therefore, a period occurs, usually about the fourth day, when the total number of bacteria in the intestinal content is extremely small.

It is now well recognized that the incidence of strains of *Micrococcus pyogenes* (Staphylococcus) that are resistant to antibiotics is increasing; at present more than 30 per cent of all strains of this organism are resistant to terramycin and aureomycin. If a patient who is receiving one of these antibiotic agents happens to have such a resistant type of *Micrococcus pyogenes* in his intestine, the stage is set for possible disaster. At first the organism in question is present only in small numbers because its growth is retarded by means of competition for nutrition from the much greater numbers of other organisms present. However, on the fourth day *Escherichia coli* has almost completely disappeared and the *Proteus* group of organisms has not greatly increased. Therefore, the micrococci take advantage of this freedom from competition and multiply rapidly. Since about 40 per cent of strains of *Micrococcus pyogenes* produce quantities of potent enterotoxin, a characteristic syndrome may be produced.

Clinical Aspects and Diagnosis

The patient who harbors such an enterotoxic organism begins to vomit; extremely profuse watery diarrhea rapidly ensues followed by hyperthermia, a decrease in blood pressure, anuria and uremia. The term "choleriformic syndrome" has been applied to this condition because of its resemblance to cholera. Once this train of events appears, its consequences are grave unless it is quickly recognized and unless proper treatment is begun immediately.

This syndrome is a true bacteriologic emergency. When diarrhea appears in a patient who is receiving terramycin or aureomycin, the phy-

sician should immediately prepare a smear of the stool and stain it by the ordinary Gram's method. If this syndrome is present, the slide will exhibit myriads of gram-positive cocci as practically the only organisms present. If these organisms are found in anything but small numbers it is essential that administration of terramycin or aureomycin be stopped immediately. When cultures are made on blood-agar plates, pathogenic *Micrococcus pyogenes* will predominate and indeed may even appear in pure culture.

It should be stressed, however, that examination of the slide is sufficient to make the diagnosis and under no conditions should the physician await the outcome of cultures before the method of treatment is changed.

Treatment

If administration of terramycin or aureomycin is continued in the face of the syndrome just described, the bacterial conditions will remain the same and the patient will probably die. If administration of these antibiotic agents is discontinued as soon as the syndrome appears, the number of coliform organisms rapidly returns to normal and thus the growth of *Micrococcus pyogenes* is suppressed. About two-thirds of patients treated in this fashion recover quickly; the remainder die within a day or so.

However, the best treatment is to discontinue the administration of terramycin or aureomycin and begin use of erythromycin by mouth. Erythromycin is effective in the intestinal tract; it is suppressive to practically all strains of *Micrococcus pyogenes* and has little preventive effect on *Escherichia coli*.

Summary

A severe and frequently fatal micrococcal (staphylococcal) enterotoxemia may appear after use of terramycin or aureomycin because of emergence and rapid growth of enterotoxic strains of *Micrococcus pyogenes* (Staphylococcus) during that period when the number of other competitive intestinal organisms is at a minimum.

The toxemia is manifested by vomiting, intense diarrhea, shock, anuria and uremia. Prompt recognition of this "choleric syndrome" is necessary to save the life of the patient. Diagnosis is established by the finding of many gram-positive cocci in smears of the stool.

Treatment consists of withdrawal of terramycin and aureomycin and administration of erythromycin.

* * *

The material just presented is the first of a series of editorial reports to be given in MINNESOTA MEDICINE under the auspices of the Minnesota Society of Clinical Pathologists. Space for inclusion of these short reports has been kindly provided through the courtesy of the Editor of MINNESOTA MEDICINE, for which the Society is grateful.

The purpose of these reports is to bring to the attention of Minnesota physicians facts pertaining to the practice of laboratory medicine that may be of value when applied to the everyday problems which are encountered by the physician. Some of these facts will be new; others may be older but will be presented in such a form as to correlate material already known so that recognized facts may be better utilized in the practice of medicine.

All pathologists of Minnesota, like those elsewhere, are ready and willing at all times to render any aid they can to the clinician so that the scientific practice of medicine and ultimately the welfare and health of the patient may be furthered. The Minnesota Society of Clinical Pathologists is anxious to further the concept of mutual consultation between its members and those physicians who are on the firing line of medical practice. The pathologist will, of course, be aided in his attempt to keep abreast of medical progress by such contact. It is hoped that the clinician can also be helped by rubbing off a bit of the surprisingly heterogeneous body of information that clings to the mental periphery of the pathologist.

Clinicians are encouraged to buttonhole the pathologist in the corridors of the hospital or in his laboratory and ply him with questions that have any bearing, no matter how remote, on laboratory medicine. If the answer is not immediately forthcoming, the laboratory physician will make an attempt to discover a source of information. It must be remembered that the pathologist is a full-fledged physician and his specialized knowledge, if actively sought in a consultative way, may provide the answer to many a puzzling clinical enigma.

The Editorial Committee of the Minnesota Society of Clinical Pathologists, consisting of Dr. Arthur H. Wells of Duluth and Drs. Arthur H. Sanford and George G. Stilwell of Rochester, hopes that these reports will be of some interest and aid. Comments from any physician are extremely welcome and suggestions regarding material for future inclusion will be gratefully embraced. Communications may be addressed to any member of this Committee.

GEORGE G. STILWELL, *Chairman*
Editorial Committee

MINNESOTA MEDICINE

Editorial

CARL B. DRAKE, M.D., *Editor*; GEORGE EARL, M.D., HENRY L. ULRICH, M.D., *Associate Editors*

THE MEDICAL SCHOOL AND MEDICAL PRACTICE

THE ADDRESS by Dr. Charles G. Sheppard of Hutchinson entitled "The Medical School in Relation to Medical Practice in the State" which appears on page 23, was given at the staff meeting of the University Hospital on October 31, 1952, and is reprinted in this issue from the *Bulletin of the University Hospitals and Minnesota Medical Foundation* for October 31, 1952.

Dr. Sheppard is a well-known practitioner. He is a Minnesota graduate and at present is Speaker of the House of Delegates of the Minnesota State Medical Association. He has been on the governor's committee for the revision of commitment laws and has served on the tuberculosis committee of the Minnesota State Medical Association. He is also on the Board of Trustees of the Minnesota Medical Foundation and has maintained his interest in the Medical School.

Dr. Sheppard deserves a good deal of credit for bringing to the attention of the staff of the Medical School a number of phases of the education not only of physicians but of nurses and laboratory and x-ray technicians which he believes could be improved. His criticism is constructive and doubtless is shared by other physicians, both in the cities and in the rural districts. His suggestion that a committee for the Medical School be appointed to confer with the Committee on University Relations of our State Association seems a logical way of handling the questions raised. We recommend the reading and thoughtful consideration by our membership of Dr. Sheppard's address.

MINNESOTA'S NEEDS IN THE FIGHT AGAINST TUBERCULOSIS

THE ARTICLE by Dr. Francis F. Callahan which appears in this issue, provides some interesting factual material about the status of the tuberculosis problem in Minnesota.

The many workers in the field of tuberculosis during the past forty years in Minnesota and throughout the country are entitled to a great

deal of credit for the remarkable reduction in mortality in the country generally and in Minnesota particularly during that period. The reduction in the number of reported cases of tuberculosis, however, has not been so striking. As Dr. E. R. Long stated in his Bell Lecture which appeared in our December issue, the number of cases among the negro population of Philadelphia has actually increased, according to the recent survey reported. Shifting population and x-ray surveys doubtless account for this.

Likewise, in Minnesota, there are certain areas which still offer a serious problem in tuberculosis control.

While it sounds like the beginning of the end of the fight to hear that several tuberculosis sanatoria in Minnesota have been closed and converted to other uses, there are certain factors, as Dr. Callahan brings out, that account for this apparent decrease in the patient load. In 1927, 200 beds for the tuberculous were added at the Veterans Hospital in Minneapolis, and recently 252 beds were provided at Anoka for the tuberculous inmates of mental hospitals of the state. In 1934, 100 beds were added to the State Sanatorium at Walker to provide for tuberculous Indians.

The migrating agricultural and industrial workers constitute a serious problem from the standpoint of the high incidence of tuberculosis in the group and the difficulty in detecting new cases and properly caring for them. Ramsey County, in contrast to some of the outlying areas, has had an insufficient number of beds in its sanatorium for many years.

One crying need for further facilities is the care of the recalcitrant patient with positive sputum who ignores proper sanitary measures to prevent the spread of the disease—the psychopath, alcoholic, tramp, and the like. What is needed, as Dr. Callahan indicates, is a 50-bed ward, preferably in connection with the Anoka sanatorium where this type of tuberculous patient can be forcibly quarantined.

The battle for the elimination of tuberculosis is progressing well, but it is far from being won.

It still requires all the means at our disposal to assure the continued reduction in the toll taken by this dread disease.

NEW COMMISSION ON ACCREDITATION OF HOSPITALS

FOR thirty-five years, the American College of Surgeons has classified the hospitals of the county according to standards set by the college. This undertaking has been instrumental in raising the quality of service rendered by the hospitals of Canada and the United States. The undertaking was, of course, entirely voluntary and has cost the College over \$2,000,000.

It has been felt in various quarters for some time that the responsibility for setting standards and classifying hospitals should, in fairness, be shared by other organizations also vitally interested in hospital care.

At the December 6 meeting, Dr. Evarts A. Graham, chairman of the Board of Regents of the College of Surgeons, turned over the College's responsibility to Dr. Gunnar Gunderson, first chairman of the new joint commission representing the American College of Physicians, the American College of Surgeons, the American Hospital Association, the American Medical Association and the Canadian Hospital Association.

That the activity of the American College of Surgeons was effective in raising the quality of hospital care is shown by the fact that in 1918, the year after the institution of the program, only 12.9 per cent of the 692 hospitals surveyed were approved, while by 1951, 81.5 per cent of the 4,111 hospitals surveyed were approved.

Headquarters for the new Joint Commission on Accreditation of Hospitals will be at 660 North Rush Street, Chicago 11, Illinois. Dr. Edwin L. Crosby, former Director of Johns Hopkins Hospital, Baltimore, is Executive Director of the Commission.

EFFECT OF TV CRIME PROGRAMS ON CHILDREN

IN OUR ISSUE of November, 1951, under the heading "Wrestling No Longer a Sport," editorial mention was made of the deterioration that has taken place in the sport of wrestling. Attention was drawn to the fact that television makes these atrocious exhibitions available to the youth

of our country and the obvious bad effect they must produce. We haven't noticed that the wrestling bouts have been discontinued as a result of the editorial.

The reproduction of wrestling matches on television constitute only a fraction of the presentations which have a deleterious effect on the youth of the country. Having acquired a television recently we, like all other owners, are in a position to evaluate the character of the programs presented—at least from five o'clock on. This marvelous invention in the field of communication has wonderful possibilities for the betterment of mankind. Man needs relaxation and amusement, and television can and does furnish both. But what about the effect of crime programs on the behavior and even the health of children?

A very impressive editorial appeared recently in the *Journal of the American Medical Association* under the title, "Influence of TV Crime Programs on Children's Health" (Sept. 6, 1952). Surveys have been made to determine the number of hours out of the twenty-four devoted to TV by children and the number of crime programs presented. Three and four hours a day spent in watching programs is not unusual. "During the week of May 24-30, 1952, six monitors tabulated 852 major crimes in addition to innumerable saloon brawls, sluggings, assaults and other 'minor' acts of violence. Their findings also include 167 murders, numerous robberies, jail breaks, murder conspiracies, false murder charges, attempted lynchings, dynamitings and an attempted rape in a crime Western for children." This was in California but doubtless applies to the rest of the country as well.

This is what we are feeding to our children in spite of the fact that we know how impressionable youth is, how prone to imitate, how emotionally unstable and how much their digestive and other functions are subject to mental reactions.

It is interesting to note that the use of TV in the field of education, which so far has only begun, is to be expanded. Television and, more particularly, colored television, has proven of value in medical education.

The transmission of TV crime programs is education of the wrong sort, and we can expect to pay for our negligence eventually. The television industry would do well to exert a much more stringent censure on the types of presentations

voluntarily, before an aroused public opinion results in governmental regulation.

SISTER ELIZABETH KENNY

SISTER KENNY, justly famous for her treatment of poliomyelitis, died in Sydney, Australia, on November 30, 1952, at the age of sixty-six. She had suffered from Parkinson's disease and recently had a stroke involving her right side and speech center.

With only the medical training of a nurse, she hit upon the value of hot packs in the treatment of children attacked by polio in the bush country of Queensland, Australia. The discovery of the value of woolen blankets wrung out in boiling water in alleviating pain in the acute cases and preventing contractions was the outcome of her efforts to do something for these victims of what was to her at that time an undiagnosed disease.

Obtaining little recognition of her contribution in Australia, she came to America and was given the opportunity to demonstrate the value of her methods in the orthopedic department of the University of Minnesota. The medical staff became convinced of the value of her contribution, and the National Foundation of Infantile Paralysis contributed \$500,000 in three years to promote study of her methods. Largely due to her inability to co-operate, a break was made in her relations with the Foundation and the Elizabeth Kenny Foundation was formed in Minneapolis with the help of public and private contributions.

Sister Kenny was a controversial personality. Her conception of the nature of poliomyelitis was not accepted by medical men, but that her emphasis on the value of hot packs and muscle re-education rendered a distinct contribution to the treatment of polio is the consensus of the medical profession.

COMMUNICABLE DISEASES

Last fall seven cases of typhoid fever occurred in Minnesota following a picnic at which food infected by a previously unknown typhoid carrier had been eaten. Such occurrences serve as reminders of how slight are the barriers between good health and the ever-threatening agents of communicable disease.

Minnesota Department of Health physicians point out that penicillin and other "miracle drugs" do not constitute a panacea for some of the most serious communicable diseases. Diphtheria, for instance, must still be combated by general immunization of the child population and by administering antitoxin when the disease occurs.

Smallpox is not amenable to any "wonder drug," and vaccination remains the one important defensive weapon against this disease.

JANUARY, 1953

ISOTOPE TRACER TECHNIQUE CITED AS VALUABLE MEDICAL ADJUNCT

As a diagnostic medium, the isotope tracer technique, using radioactive isotopes produced by the United States Atomic Energy Commission, has been hailed as one of the most valuable medical adjuncts since Roentgen's discovery of the x-ray.

A high accuracy in the determination of malignant and nonmalignant thyroid conditions was reported in an article in a recent issue of *Radiology*, published by the Radiological Society of North America and devoted to clinical radiology and allied sciences.

A report of experiences with the isotopes at the Harper Hospital, Detroit, was presented by K. E. Corrigan, Ph.D. and H. S. Hayden, Ph.D., both associated with the radiology department of the hospital.

The diseased thyroid gland is usually not a continuous organ; thyroid tissue is frequently found beyond the bounds of the capsule that surrounds the main gland. Local areas of malfunction are probably the most significant diagnostic problems. The Detroit scientists pointed out, "The thyroid is a highly unreliable organ, and in any state of malfunction its location and distribution are seldom those shown in the books on anatomy."

To aid in the diagnosis, radioactive iodine (I 131) was given by mouth on an empty stomach, excepting in cases where the patient was unable to swallow, in which event the isotope was administered intravenously. The radioactive material had a tendency to accumulate in diseased spots, which were then located by a Geiger counter in scanning studies covering the body.

The report said that 1,754 tracer studies were conducted up to the end of last March, with 107 diagnoses of a malignant growth of the thyroid.

"Of these," the scientists added, "eleven were totally unsuspected on clinical or any other grounds and were first reported as malignant by tracer technique."

Four cases diagnosed malignant could not be demonstrated by subsequent microscopic examination of the tissue, although one later developed a metastasis (spread of a disease to elsewhere). In one case, a malignant lesion was found which had not been reported.

"In the other 151 operated cases, in which the original problem was to distinguish between malignant and non-malignant thyroid disease prior to operation and the tracer report was negative for malignancy, no malignancy was found in any case," the report added.

The Detroit scientists also reported the use of a Geiger counter which had been built into a sterile probe. In one case, after the surgical removal of all of the thyroid tissue detectable by visual observation and feeling, the probe counter was inserted into the wound. It showed a strong localization of the radioactive iodine in an out-of-the-way place. A larger incision was made, and at the tip of the probe was found a dark colored ball of tissue.

This tissue on microscopic examination proved to be completely cancerous, the article added. The significance is that without the tracer technique, the second malignancy would not have been found, it was pointed out. "Since these apparently represented all the residual cancer present, the tracer obviously gave the patient some chance of prolonged life which he would not have had otherwise," the report said.

The Detroit scientists emphasized the importance of a thorough technique, adding that any inadequate procedure, especially one where a diagnosis is based on a single observation, can be dangerous and misleading.



ORWOOD J. CAMPBELL, M.D.
President, Minnesota State Medical Association

President's Letter

A YEAR TO REMEMBER

The honor and privilege of becoming president of an organization is doubly significant and meaningful when that organization is commemorating its 100th anniversary. Such it is for me, as I assume the presidential duties of the Minnesota State Medical Association.

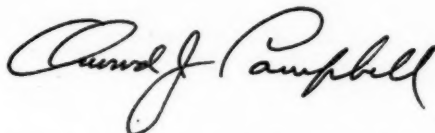
The organized medical profession of the state is, indeed, experiencing a memorable year. This is a year for remembering the marvelous medical advances which have been developed for the benefit of mankind during the past hundred years: the discovery of the "wonder drugs," the great decreases in communicable disease, the reduction of maternal and infant deaths, the great strides in public health, the improvements in treatment of mental illness, the reduction of surgical mortality accompanying the great expansion of the field of surgery, the development of improved methods and equipment, and the constant research into all medical fields so that continued progress will be assured in medicine's fight against one of man's most ruthless enemies, ill health.

The year 1953 is also a year for remembering individual contributions to the field of organized medicine: the fine work of the organization's outstanding workers; the years of service rendered by countless officers, councilors, committee chairmen, committee members; and the devotion of all association members who have faithfully supported the organization through the years.

But, as the centennial year begins, it is not only a time for looking back on past achievements, but a time for looking forward, a time to plan ahead for better service as a medical profession.

I am repeatedly impressed by the sacrifice of time and the real intelligence which busy practitioners have shown toward medicine's problems. I am proud that the Minnesota State Medical Association is comprised of such service-minded physicians who make up its list of officers, councilors, delegates, committees and members. I know that I, as president, can count on their willing cooperation and help in determining and carrying out Association policies.

I pledge myself to use my best thought and effort toward the betterment of the service which medicine can render the public, and toward a betterment of the understanding between the public and the great profession of which we are all a part.



President, Minnesota State Medical Association

Medical Economics

Edited by the Committee on Medical Economics
of the
Minnesota State Medical Association
George Earl, M.D., Chairman

COSTS AND INFLATION SLOW HILL-BURTON PROGRAM

The latest progress report on the Hill-Burton construction program shows that inflation and budget restrictions are rapidly slowing down the entire program. Since the program began six years ago, construction costs per bed increased, according to hospital authorities, about 50 per cent.

A résumé of the whole program states that approval has been given for 1,877 projects for federal grants totaling just over half a billion dollars. Of the 90,645 beds, about 44 per cent are already in operation, with the remainder under construction or in the planning states.

Appropriations for hospital construction have risen and fallen over the period of Hill-Burton's existence. For fiscal 1948 and 1949, the first full years of operation, appropriations made by Congress were for \$75 million annually. Then, in 1950, Congress increased the maximum limit to \$150 million, and voted the full amount. The next three years were given appropriations of \$85 million, \$82.5 million and \$75 million, respectively.

Purposes Reviewed

A high percentage of funds has been given to relatively large institutions in urban areas. However, the program was primarily designed to give aid to the building of small hospitals and in rural areas. The Division of Hospital Facilities, Public Health Service, has this to say on the subject: "Although 57 per cent of the new projects are for facilities with fewer than 50 beds, only 25 per cent of the federal funds . . . (go) . . . to these smaller facilities. A little more than half of the federal money for new hospitals assists facilities with 100 or more beds. For additions or alterations, 82 per cent of federal funds is going to hospitals with 100 beds or more."

States Distribute Funds

According to the law under which Hill-Burton operates, funds are allocated to states for distri-

bution. The responsibility of determining what projects get priority in fund allocation, is placed in the hands of the state hospital authority. Decision to leave it up to the states was based on a survey of hospital facilities and the willingness of local communities to make plans and raise money.

Although the emphasis is on larger, long-range jobs, it is noted that reduced grants are not immediately reflected in the administrative workload, which is expected to continue at about its present level for several years. At present, nineteen medical school-connected hospitals are grant-receivers.

REPUBLICAN VICTORY DEALS BLOW AT STATE MEDICINE

The second-guessers have waxed long and loud ever since the overwhelming Republican victory last November. As Eisenhower's new administration begins its arduous task of governing and administering, all eyes will be on Washington and its activities, and the observers will express themselves on activities, with great amounts of hindsight. Because hindsight is a less glamorous term than analysis, it is easy to understand why there is such a dearth of it, for, on the whole, it is a good deal safer and surer than wise foresight.

But a long sober look at the situation is usually highly worth the while for anyone who is vitally interested and affected by what goes on in his government. Doctors of the nation are no less interested and affected than any other conscientious American citizen, and have been so especially in the past few years.

And thus, the American Medical Association, in a post-election Secretary's letter, not to be outdone in second-guessing, sums up the Republican victory: "American voters went to the polls in record numbers last Tuesday and, in no uncertain terms, repudiated the Washington administration and everything it advocated, including compulsory health insurance."

The phrase, "everything it advocated," seems a little strong, when considered in the light of the fact that Eisenhower apparently does not intend nor does he even hint that he wants to clean out all New Deal policies and programs. He indicated in his campaign speeches that he was interested in improving most of them and in sharpening and polishing them to top efficiency.

But, the Republican victory certainly does bring with it a definite refutation of the compulsory health scheme which the Truman administration promulgated. The Secretary's letter states: "Doctors will no longer have to dance to the tune of the Ewing pipers, but can devote their full time and energy to a sound, constructive and unselfish program of better medical care for all the people—a program completely divorced from politics."

The letter goes on to quote the *Christian Science Monitor* which felt that "the President (Truman) totally underestimates the opposition to this program." The letter quotes the editorial more fully:

"President Truman's effort to win support for compulsory health insurance by refraining from calling it compulsory is misleading. Any comprehensive government system of medical care insurance is bound to involve compulsion. It would be like the government's old-age insurance. Both employer and employee would be required to pay a tax, and it would be large. In Europe the taking of treatment prescribed in some cases is also compulsory."

Opposition Widespread

In its description of Truman's disbelief of opposition to the compulsory health insurance plan, the *Christian Science Monitor* continues:

"He pictures it as consisting only of a medical lobby of a few men in the American Medical Association. On the contrary, the hostility to socialized medicine—which government health insurance implies—has long been dominant in and out of Congress."

Governors Polled

Governors of the forty-eight states were polled at the time of the Wagner-Murray-Dingell bill, and the paper reports:

"In 1947 Senator H. Alexander Smith, chairman of a Senate committee holding hearings on a national health policy, wrote to the governors of the forty-eight states asking their views on two bills before Congress. One was the Wagner-Murray-Dingell bill providing for a national system of compulsory sickness insurance. Not

a single governor recorded himself as favoring such a program. The legislatures of a number of states have memorialized Congress in opposition.

"Many leading organizations have adopted resolutions against the proposition. These include the American Bar Association, the Chamber of Commerce of the United States, the American Farm Bureau Federation, the National Grange, the General Federation of Women's Clubs, the National Federation of Business and Professional Women's Clubs, the American Legion, and scores of others."

Summing up its feeling that this widespread opposition should be enough to make proponents realize its extreme unpopularity, the *Monitor* states: "The widespread antagonism to government-imposed health insurance is a natural reaction against a proposal which would involve great extension of government control, bureaucracy, deterioration in the quality of medical service, and invasion of the rights of the individual."

HEALTH INSURANCE HELD BY HALF OF UNITED STATES

Approximately 86 million Americans—well over half the country's population—has some form of health insurance. Some of it is sold by commercial insurers, but a big portion is administered by private associations linked to organizations of doctors and hospitals.

This information is seen in a recent issue of *U. S. News and World Report*. The survey, based on extensive research by the Federal Reserve Board, makes a general summary of the kinds of insurance held by Americans: "If you have hospital insurance only, you still must dig into your pocket to pay a surgeon for operating. If you have both kinds of this insurance, you will find a big part of your bills for expensive medical treatment is paid in advance."

Unpaid Bills Mount

The survey also showed that unpaid medical bills are owed by nearly one family in five. It states: "The average debt for each of these 10.2 million families is \$105, or a total of more than 1 billion dollars. Doctors have a problem in collecting this considerable portion of their income."

In analyzing the composition of these groups of Americans, the survey points out:

"Young families with children, mainly farmers or workers with small to moderate incomes, are most frequently in debt for medical care. Nearly one third of

MEDICAL ECONOMICS

those 15.9 million families in which the family head is less than 45 years old and children are under 18 owes medical bills. If you are among this big group of families, you also are among those most heavily in debt for medical care; of the 1.2 million families who owe doctors \$200 or more, two thirds are among those with young children."

Whole Cost Not Seen

The study also notes that it cannot report the entire amounts that families spend for medical care:

"Debts do not reflect all that families spend for medical care. When serious illness strikes, some have savings they spend before going in debt. Some, without savings, borrow from banks or other lenders, especially to meet hospital costs, which usually must be paid in advance. Millions have some form of private health insurance which, in major illness, pays a big part of the bill.

"Of all money spent privately for medical care in the U. S., about \$1 out of \$9 remains as a debt to a doctor, hospital or pharmacist."

FDIC FURNISHES HEALTH COVERAGE

The Federal Deposit Insurance Corporation became the first government agency to give paid-up health plan coverage to its employees. According to a recent Washington Report on the Medical Sciences, FDIC has nearly 1,100 salaried workers, of whom some 400 are in Washington and the remainder scattered in the field from coast to coast.

The benefits are without cost to the employees. The report says that "they will receive benefits including up to seventy days hospital coverage and liberal in-hospital medical and surgical care, on an indemnity basis."

The plan also allows employees to choose whether they want payroll deductions to cover dependents. Rates are as follows:

"A worker desiring coverage for a spouse, or a child under age nineteen, will pay \$3.59 a month. For family coverage, regardless of size, the rate will be \$5.27 monthly. Top surgical fee is \$250. Fee allowed for each in-hospital visit by attending physician is \$4, with maximum of twenty-three visits allowable in first nineteen days of hospitalization. Freedom of choice of doctor and hospital is guaranteed."

Although the FDIC is a federal agency, it is empowered to grant such a benefit program be-

cause it does not receive any funds from the U. S. Treasury. Its operating revenue comes from premiums levied on banks with insured deposits, hence it needs no Congressional law to authorize a program of this kind. There are other government agencies which are not Treasury-supported, and which may possibly wish to follow FDIC's lead. Among these is the Federal Reserve System.

It is also interesting to note that the signing of the FDIC contract with Health Service, Inc., was a precedent, and, according to the Washington Report, "may give impetus to the movement on Capitol Hill for enactment of legislation giving comparable health care coverage to all 2.5 million Federal workers, with Uncle Sam paying 50 per cent or more of the cost."

THE MINNESOTA STATE BOARD OF MEDICAL EXAMINERS

230 Lowry Medical Arts Building

Saint Paul 2, Minnesota

Julian F. DuBois, M.D., Secretary

MINNEAPOLIS PHYSICIAN SENTENCED TO FOUR YEARS IN FEDERAL PRISON

Re United States of America vs. Russell R. Heim

On November 10, 1952, Russell R. Heim, M.D., sixty-six years of age, with offices in the Wesley Temple Building, Minneapolis, and Coroner of Hennepin County, was sentenced to a term of four years in a Federal Penitentiary by the Hon. Gunnar H. Nordbye, Judge of the United States District Court at Minneapolis. Dr. Heim was found guilty by a jury on October 29, 1952, of 229 violations of the Harrison Narcotic Act.

The evidence at Dr. Heim's trial disclosed that Dr. Heim had issued 177 fictitious narcotic prescriptions for patients who did not receive the narcotic drugs. The evidence further showed that Dr. Heim sold the narcotic drugs to patients who were identified at the trial as known addicts, one of whom was employed by Dr. Heim in his office. Dr. Heim testified in his own behalf and admitted the writing of the prescriptions, but claimed that it was only a "technical" violation of the law and was done without any intent on Dr. Heim's part to willfully violate the Harrison Narcotic Act. The jury refused to believe Dr. Heim and brought in a verdict of guilty on each one of the 229 counts in the indictment.

Dr. Heim was born at Plymouth, Indiana, and received his medical education at the University of Illinois, obtaining an M.D. degree in 1910. He was licensed in Minnesota in June, 1919, by reciprocity. Dr. Heim has been Coroner of Hennepin County since January, 1943. On November 22, 1952, Dr. Heim was served with a citation requiring him to show cause on February 13, 1953, why his license to practice medicine in Minnesota should not be revoked. Dr. Heim is serving his sentence at the Federal Penitentiary at Milan, Michigan.

MINNESOTA MEDICINE

Minnesota Academy of Medicine

Meeting of May 14, 1952

The regular monthly meeting of the Minnesota Academy of Medicine was held at the Town and Country Club on Wednesday evening, May 14, 1952. Dinner was served at 7 o'clock and the meeting was called to order at 8:10 p.m. by the President, Dr. O. H. Wangenstein.

There were fifty members and eleven guests present. Minutes of the April meeting were read and approved.

Dr. Wangenstein announced the death of Dr. Charles D. Freeman which occurred since the last meeting and appointed Dr. Hynes and Dr. Hullsiek a committee to prepare a memorial to Dr. Freeman to be presented at the October meeting.

The Secretary announced that the Executive Committee had voted unanimously to transfer Dr. Clarence Dennis' name from the Active to the Honorary list and so recommended to the members present. Upon motion, it was so voted by the members.

Dr. Wallace Ritchie read a memorial to Dr. Alfred Adson and a motion was carried that it be placed on the records of the Academy and a copy sent to the family.

ALFRED W. ADSON

1887 - 1951

On November 12, 1951, one of the outstanding physicians of our time passed away at the age of sixty-four years.

Alfred Washington Adson was born in Terril, Iowa, on May 13, 1887. His father, a Norwegian sailor, had settled in Iowa and farmed in the early days of the nineteenth century. His education at the local high school and at the University of Nebraska gave early evidence of a keen, ambitious, constructive mind. Dr. Adson received his degree of Doctor of Medicine in the University of Pennsylvania in 1914, following which he received an appointment in general surgery at the Mayo Clinic. He rapidly advanced to the position of Professor of Neurosurgery of the Mayo Foundation, Graduate School, University of Minnesota, heading the section of neurosurgery from January 1921 to October 1946, when he became senior neurosurgeon.

Dr. Adson's contributions were outstanding, not only in the field of neurosurgery but also in the fields of organized medicine. In spite of an exacting life as a neurosurgeon, he felt an obligation to medicine in general, as indicated by the many positions he held in both state and national medical organizations.

One of the most important contributions to his medical colleagues and to the public was his unceasing efforts to advance the ideals and standards of medicine as evidenced by his loyal service to the Minnesota State Board of Medical Examiners from 1929 to 1951.

Neurosurgery was still an undeveloped field of surgery when Dr. Adson removed his first brain tumor on December 7, 1916, resulting in a complete cure of the patient.

The next thirty-five years witnessed a tremendous advance in neurosurgery. Dr. Adson's contributions to this advance were innumerable and important. He improved techniques, invented numerous instruments, and was a leader in the development of surgery of the sympathetic nervous system.

A good indication of a man's value to his world is by

the number and calibre of the men he has influenced during his career. Three months before Dr. Adson's death, his former fellows honored him with a testimonial dinner. Approximately sixty-five out of a possible seventy-five men were present. The number returning is ample evidence of the respect and devotion that Dr. Adson inspired. Many of those present were already leaders in the specialty of neurosurgery.

Dr. Adson was admitted to membership in the Minnesota Academy of Medicine on April 13, 1938. His thesis was entitled: "Spina Bifida Cystica of the Pelvis; Diagnosis and Surgical Treatment."

His untimely end at the height of a great career was a shock to his many friends. Few men, however, are given the privilege to leave behind such a memory of indefatigable energy, creative instinct, stimulating leadership, and high character as has been left by Dr. Adson.

WALLACE P. RITCHIE

It was decided that the two papers of the evening, both on the subject of tuberculosis, be given first and then discussions of both papers follow.

PRELIMINARY REPORT ON THE PRESENT STATUS OF TUBERCULOSIS IN MINNESOTA

F. F. CALLAHAN, M.D.

Saint Paul, Minnesota

Dr. Callahan's paper appears on page 33 of this issue.

CHANGING TREATMENT OF TUBERCULOSIS

THOMAS J. KINSELLA, M.D.

Minneapolis, Minnesota

Dr. Kinsella's paper appears on page 29 of this issue.

DISCUSSION

DR. S. M. WHITE, Minneapolis: Dr. Callahan has emphasized the remarkable diminution in the death rate from tuberculosis in Minnesota. This does not give an over-all view of the situation for there seems to be no comparable diminution in the extant number of cases of the disease nor in the number of new cases reported per annum. I would like to know what is known about the situation with regard to morbidity in tuberculosis. Also, is the practitioner in Minnesota getting any better able to discover the disease early, aside from the mass surveys? And are the patients coming in any earlier than they did ten or twenty years ago?

DR. CALLAHAN: We do not have tuberculosis morbidity figures on a state-wide basis. We have some morbidity studies that have been carried on in many rural counties particularly in central and southern Minnesota. This work has continued for a number of years and we believe that the findings are reliable. The object of these studies has been to determine the effectiveness

of the tuberculosis treatment and control program in the counties patterned after the method of establishing accredited counties worked out a number of years ago for the control and eradication of bovine tuberculosis.

A county, in order to be accredited in the human tuberculosis control program, must have a mortality rate of ten or less per 100,000 population per year and 90 per cent of all high school students in the county must show 10 per cent or less positive tuberculin reactors. In these accredited counties, the morbidity as well as the mortality rate is definitely on the decline. The Health Service at the University of Minnesota has been conducting tuberculosis morbidity studies of the student body for more than twenty years, and there has been a steady decline in the number of tuberculin reactors in this group. It appears that since the introduction of mass x-ray surveys, very few morbidity studies have been made in metropolitan areas.

The general practitioners in the state are not only diagnosing tuberculosis earlier than they did ten or twenty years ago but many of them are giving satisfactory follow-up post-sanatorium care to patients living in counties that do not belong to a sanatorium district.

DR. THOMAS LOWRY, Minneapolis: There are many things one would like to talk about. I have enjoyed both of these papers immensely. I know Dr. Callahan will agree with me that in many parts of the country the tuberculosis situation is very, very different. Some of us have contacts at General Hospital where we see the itinerant population. We know even if we did get rid of tuberculosis in this area we would still have a constant influx or "hard core" of these patients from other parts of the country. As long as transportation and general migration of the population is as extensive as it is today, we are always going to have tuberculosis. I think another corollary of that is the question of benefit or lack of benefit of having been exposed to tuberculosis; is the man with a positive tuberculin test better fitted to go into areas with a high tuberculosis rate? The population of Minnesota is gradually becoming tuberculin negative and thus becoming highly susceptible to tuberculosis, and this brings up the question of vaccination with BCG of individuals having greater than average risk of exposure.

I would like to ask Dr. Kinsella how he feels about the treatment of minimal tuberculosis lesions which may regress on sanatorium treatment and arrive at a stable condition which we earlier would have felt was entirely satisfactory. Would he wish to take those out in order to avoid the chance of having them break down later?

DR. R. H. FROST, Oak Terrace (by invitation): I have enjoyed very much these two fine papers on tuberculosis. Dr. Callahan properly laid stress on the striking decrease in our tuberculosis mortality rates during this century. As an example of this lowered death rate, it is estimated that if the mortality rates of 1900 had continued unchanged during the past fifty years, some 5 million more persons would have died of tuberculosis than actually did die of tuberculosis during this period—certainly a notable achievement. But I think we would be making a mistake if we were to center our attention too exclusively on the lowered mortality rates, and fail to realize that tuberculosis morbidity or attack rates—the actual number of patients requiring treatment for active tuberculosis—are not decreasing in any such degree, and in many metropolitan areas are actually increasing. The reasons for this are not entirely clear. Probably the most important reason is that we are going out and looking for tuberculosis by means of community-wide chest x-ray surveys and generally more effective case-finding programs.

In spite of the great progress that has been made, the fact remains that tuberculosis is still our most important public health problem. It still kills more people than all other communicable diseases combined, and more persons in the fifteen to thirty-four-year age group

than any other pathologic entity. In a very real sense, we have only skimmed the cream of our tuberculosis control program—and we must now go to work to find tuberculosis and, having found it, treat it vigorously with the vastly improved techniques now available to us.

The therapy of tuberculosis is in a tremendously dynamic state. The things that have happened in the past few years are really amazing. For the first time we have truly effective antituberculosis drugs. To a very large extent we have abandoned collapse therapy as definitive treatment of pulmonary tuberculosis. Dr. Kinsella mentioned his collected, over-all mortality rates in pulmonary resections for tuberculosis. At Glen Lake Sanatorium in 1951, he (as our chief consultant in thoracic surgery) and one other thoracic surgeon did resections in 133 patients with three deaths. In retrospect, those three were probably not properly selected and would not be resected today. The initial results of these procedures are almost spectacularly good: a respectably low mortality, very few postoperative complications, good preservation of pulmonary function, a very high percentage of conversion of sputum and gastric cultures from positive to negative. Obviously much more time is going to be required in order to prove that these initially good results are going to hold up. I personally feel we are on the right track, and that for the first time in medical history we can treat tuberculosis in a truly definitive way. Certainly we are now restoring to health and good working capacity many tuberculous patients who until these recent years had nothing to look forward to except years of invalidism or death.

We have not started on intrapleural pneumothorax in the past two years. At Glen Lake Sanatorium practically the only type of collapse therapy now in use is a modest amount of pneumoperitoneum—and that primarily as a temporary "holding procedure" in relatively acute disease in the lower half of one or both lungs. Our best results in resectional surgery are obtained in lesions which, after adequate bed rest and chemotherapy, have become stationary and are no longer changing one way or the other. We still do some extrapleural thoracoplasties, but only as "tailoring" or space-filling operations in conjunction with, typically, an upper lobectomy. The incidence of such once-common postoperative complications as bronchopleural fistula and empyema is extremely low. However, it will probably be ten years before we can be sure that this is the proper way to treat pulmonary tuberculosis.

DR. JOHN F. NOBLE, Saint Paul: In the past eighteen months I have had the opportunity to study pulmonary tuberculous lesions removed surgically at the Ancker Hospital. Our material to date, however, is relatively small compared with Dr. Kinsella's experience. I agree with Dr. Frost and Dr. Kinsella both in their enthusiasm for this type of therapy, and I also agree that in order to properly evaluate it, a period of at least ten years must elapse.

Certain things about the excised material are interesting from a pathological standpoint. The lesions excised show an almost constant picture. The caseous areas are almost invariably surrounded by a dense fibrous zone. The picture is so constant that I am wondering whether the fibrosis is secondary to the chemotherapy. This, however, will be difficult to prove.

We have also learned that lesions diagnosed by planogram as cavities are frequently only potential cavities and are completely filled with caseous material. As far as I can determine they do not communicate with the bronchial tree at the time they are removed, although this potentiality must always be present. I cannot become too enthusiastic about the removal of minimal pulmonary lesions in children.

DR. J. R. AURELIUS, Saint Paul: I want to thank Dr. Callahan and Dr. Kinsella for presenting this subject. I feel very fortunate in having a ringside seat in this

fast-changing picture of tuberculosis therapy. We radiologists seem to have the advantage of seeing it from all angles. Not very long ago we were seeing these patients pretty much put to bed and hoped for a cure through passive therapy but are now seeing the progress that is being made through active chemotherapy combined with surgery. Radiology has made some contribution to this in a way through the use of planograms. We think we see all there is in a chest when we get a good x-ray film of the chest but it is remarkable what additional findings the planogram will bring out. We are in a state of flux at present in the therapy of tuberculosis. It is a great period and it is very interesting to be on the sidelines and watch the passing show.

DR. CALLAHAN, in closing: In reply to Dr. Lowry's discussion on the itinerant patient, we believe that the tuberculous patient without state or county residence is one of the major roadblocks in the tuberculosis control program in the state and the problem is liable to increase before it gets better. Not only do patients with tuberculosis establish themselves in cities and counties known to have a good tuberculosis sanatorium, but on occasions county welfare board officials and health officers from other states have been known to advise patients to come to Minnesota for treatment. One welfare board actually paid a patient's railroad fare from a city in one of the west coast states to Minneapolis. On his arrival, he reported to the City Health Department and was committed as a public health menace.

In reply to Dr. Robb's question, histoplasmosis can produce isolated lung lesions that cannot be differentiated from active tuberculosis except by bacteriological studies. At a recent meeting of the Minnesota Trudeau Society, Dr. Corrin Hodgson reported three cases of isolated histoplasmosis in which the lesions had been resected. One of these cases had a rather large lung cavity that had the typical appearance of tuberculosis in the x-ray film. However, the usual case of histoplasmosis shows widespread calcified nodules in the lungs often associated with calcification of the hilar lymph nodes.

WALLACE P. RITCHIE, *Secretary*

ACCIDENTS LEAD AS KILLERS

Accidents cause more deaths in Minnesota in an average year than all communicable diseases, including tuberculosis; more than diabetes, arteriosclerosis, and nephritis combined; more than all adverse conditions of maternity and infancy. Accidents constitute the leading cause of death in all age groups up to thirty-five years.

More than 1,300 Minnesotans were killed in accidents during the first ten months of 1952. One-third of these deaths were caused by accidents in the home. One-third were motor vehicle accidents. One-third occurred in public places other than streets and highways, and in places of occupation.

During the period from January through October, 1952, home accidents outnumbered motor vehicle accidents, 489 to 452. During 1951, the last year for which complete figures are available, home accident deaths totalled 604, or approximately one for each 5,000 of our population.

For every accidental death, the National Safety Council estimates that 150 nonfatal accidents occur. Using the figures of the first ten months of 1952 as a basis, we may expect to finish this year with approximately 550 deaths and 82,500 disabling injuries from home accidents alone.

Falls are by far the leading causes of accidental death in homes. More than half the total of home accident

deaths last year (358) were caused by falls. Other leading causes, in order of number of deaths caused, were burns, poisons—including gas poisoning—mechanical suffocation, and firearms.

Two main measures are recommended to cut down this appalling total—better housekeeping practices and more care in home situations. The "accident prone" individual is the biggest problem, because he constitutes a factor that is almost impossible to control. "He is impulsive. He is apt to act upon the spur of the moment. He is essentially a rebel. He cannot tolerate even self-discipline." Thus accidents are basically a mental health problem.

Prevention of accidents requires cooperation among home, school, community agencies, and health services. The public health nurse, who visits families in their homes, is in the most favorable position to help them prevent home accidents. She can do much to point out home hazards that might lead to accidents, and to assist in the correction of these conditions. She may also arrange for clinical studies of "accident prone" persons to determine ways of helping them and their families.—*Minnesota's Health*, December, 1952.

WHAT KILLS OUR YOUNG PEOPLE

Here are the leading causes of death, by ages, in Minnesota during 1951, for age groups under thirty-five:

Age in Years	Total Deaths	Three Leading Causes of Death
1-4	288	Accidents, 98; congenital malformations, 39; cancer, 38.
5-9	166	Accidents, 66; cancer, 25; diseases of central nervous system, 15.
10-14	130	Accidents, 59; cancer, 19; diseases of central nervous system, 9.
15-19	199	Accidents, 105; cancer, 15; diseases of central nervous system, 10.
20-34	722	Accidents, 274; cancer, 101; diseases of the heart, 49.

Virginia (Minn.) Health Bulletin, September, 1952.

DETECTION OF TUBERCULOSIS

Tuberculosis is notorious for the difficulty of detecting it in its early stages. By the time it is discovered, the disease usually has been transmitted to others. In view of this fact, no method of treatment will solve the TB problem in short order, although improved methods should help hasten the far-off day of eradication of tuberculosis. A good vaccine, superior to BCG—the one most widely used at present—would have greater potentialities for rapid control of tuberculosis than any method of treatment. There is no simple solution to the tuberculosis problem. The disease, because of its infectiousness, its present prevalence, its symptomless onset, its long duration, its tendency to recur even though once arrested, is one of the most complex and costly public health problems in the United States.—JAMES E. PERKINS, M.D., Annual Report of the NTA, Apr. 1, 1951, to March 31, 1952.

◆ Reports and Announcements ◆

INTERNATIONAL COLLEGE OF SURGEONS

Qualifying examinations for Fellowship in the United States Section of the International College of Surgeons will be held on the following dates in 1953: February 2 and 3, May 4 and 5, August 10 and 11, and November 2 and 3. The examinations will be given at the Cook County Graduate School of Medicine, and the Cook County Hospital. Applicants are requested to address communications to Harry A. Oberhelman, M.D., Secretary, Qualification and Examination Council, 1516 Lake Shore Drive, Chicago 10, Illinois.

WORLD MEDICAL ASSOCIATION AND PAN AMERICAN CONFERENCE

The first western Hemisphere Conference of the World Medical Association, of which Dr. Louis H. Bauer is Secretary General, will be held in conjunction with the Pan American Medical Conference, of which Dr. Jose Angel Bustamante of Havana is president, at Richmond, Virginia, April 23 to 25, 1953. The A. H. Robins, Inc., a pharmaceutical house of Richmond, is providing funds to cover the cost of the meeting. Scientific sessions will consist largely of panel discussions. The meeting will conclude with a dinner, Dr. Bauer presiding.

WORLD CONGRESS ON FERTILITY AND STERILITY

The First World Congress on Fertility and Sterility will be held May 25 to 31, 1953, at the Henry Hudson Hotel in New York City. This Congress is sponsored by the International Fertility Association with the cooperation of the American Society for the Study of Sterility.

Twenty-three scientific sessions will be held, including subjects dealing with socio-economic factors, psychosomatic aspects, and artificial insemination. The meetings will be conducted in English, French and Spanish, with the use of earphones and simultaneous translations, as in the United Nations meetings.

In addition to the scientific sessions, there will be medical round-table discussions, question and answer periods, scientific exhibits, and motion pictures.

It is anticipated that 1800 scientists from fifty-one countries will attend the Congress. Those who plan to attend should write as soon as possible to the Chairman of the Local Arrangements Committee, 1160 Fifth Avenue, New York 29, New York, for advance registration.

AWARD FOR OUTSTANDING RESEARCH IN THE FIELD OF INFERTILITY

The American Society for the Study of Sterility announces the opening of the 1953 contest for the most outstanding contribution to the subject of infertility and sterility. The winner will receive a cash award of one thousand dollars, and the essay will appear on the

program of the 1953 meeting of the Society. Essays submitted in this competition must be received not later than March 1, 1953. For full particulars concerning requirements of this competition, address The American Society for the Study of Sterility, c/o Dr. Herbert H. Thomas, 920 South 19th Street, Birmingham, Alabama.

The author should append on a separate sheet of paper a short biographical sketch of himself and include a photograph to be used in the necessary publicity should he be the winner of the award.

MISSISSIPPI VALLEY MEDICAL SOCIETY CONTEST

The Thirteenth Annual Essay Contest of the Mississippi Valley Medical Society will be held in 1953. The Society will offer a cash prize of \$100.00, a gold medal, and a certificate of award for the best unpublished essay on any subject of general medical interest (including medical economics and education) and practical value to the general practitioner of medicine. Certificates of merit may also be granted to the physicians whose essays are rated second and third best.

Contestants must be members of the American Medical Association who are residents and citizens of the United States. The winner will be invited to present his contribution before the Eighteenth Annual Meeting of the Mississippi Valley Medical Society to be held in Springfield, Illinois, September 23 to 25, 1953, the Society reserving the exclusive right to first publish the essay in its official publication—the *Mississippi Valley Medical Journal* (incorporating the *Radiologic Review*).

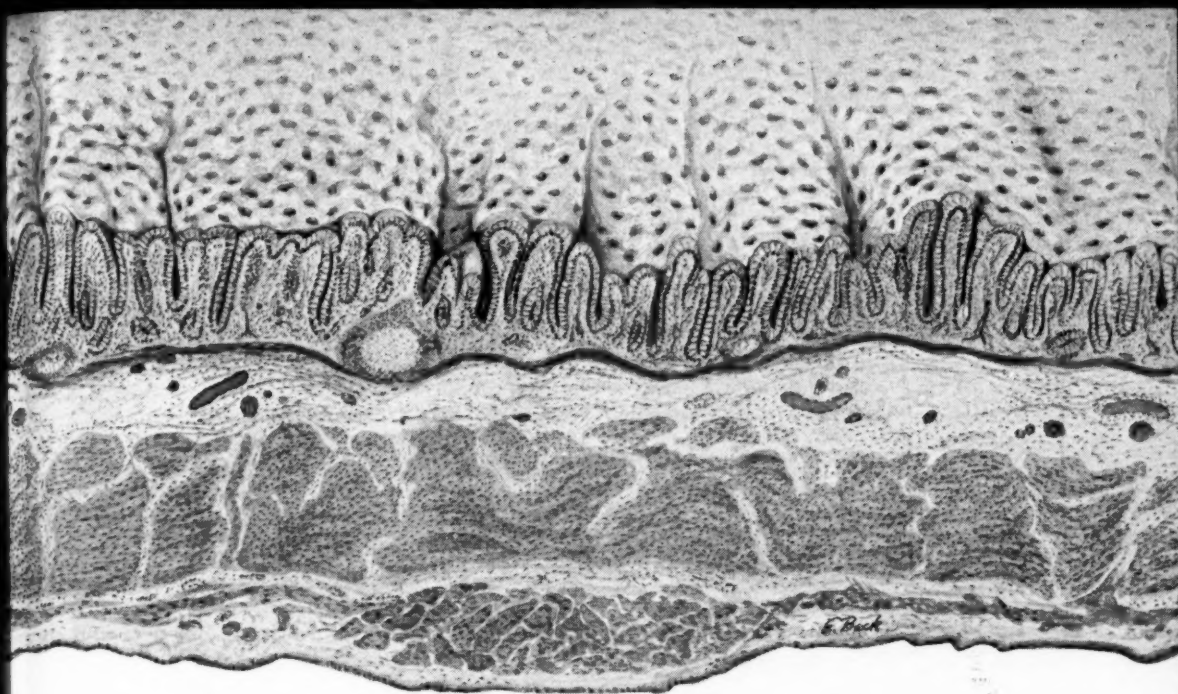
All contributions shall be typewritten in English, in manuscript form, submitted in five copies, not to exceed 5,000 words, and must be received not later than May 1, 1953. The winning essays in the 1952 contest appear in the January 1953 issue of the *Mississippi Valley Medical Journal*.

Further details may be secured from: Harold Swanberg, M.D., Secretary, Mississippi Valley Medical Society, 209-224 W.C.U. Building, Quincy, Illinois.

CONTINUATION COURSES

The University of Minnesota, in conjunction with the Minnesota Heart Association, will present a continuation course in *Cardiovascular Diseases* at the Center for continuation Study on February 12 to 14, 1953. Intended primarily for physicians engaged in general practice, the course will emphasize treatment of the more common cardiovascular disorders. Peripheral vascular disease will be thoroughly discussed. The program will also feature a clinical correlation session.

The guest faculty will include the eminent cardiologist, Dr. Arthur M. Master, Associate Professor of Clinical Medicine, Columbia University College of Physicians and Surgeons, New York City. Clinical and full-time members of the staff of the University of Minnesota



Normal peristaltic action results from activity of the muscle layers as they are gently distended by bulk within the intestine; mucosal irritants cause overactivity of the muscle layers resulting in hyperperistalsis or spasm.

Corrective Action of Metamucil® in Abnormal Physiology of Constipation

Abnormally prolonged colonic retention, whether in a spastic or an atonic colon, demands the greatest care to assure correction.

The mucosa does not require stimulating; hence, stimulating cathartics, "roughage" and other physical and chemical irritating measures, are today often considered irrational.

On the other hand, the muscularis does require a stimulus to initiate peristalsis. This physiologic stimulus is the mechanism by which bland distention of the colon establishes a reflex, with the muscularis at the terminus of the reflex arc.

Metamucil literally reeducates the sluggish and also the spastic colon. Taken with adequate amounts of water, Meta-

mucil forms a smooth, hydrophilic colloid. As this colloidal mass passes through the large intestine, it exerts a gentle, distending pressure within the lumen, thus initiating the peristaltic reflex necessary for evacuation.

A program of Metamucil therapy helps to restore proper tone to the intestinal musculature, thereby establishing proper bowel habits.

Metamucil® is the highly refined mucilloid of *Plantago ovata* (50%), a seed of the psyllium group, combined with dextrose (50%) as a dispersing agent. It is accepted by the Council on Pharmacy and Chemistry of the American Medical Association.

G. D. SEARLE & Co.

Research in the Service of Medicine

ANNOUNCING

The Sixteenth Annual Meeting of THE NEW ORLEANS GRADUATE MEDICAL ASSEMBLY

Conference Headquarters — Municipal Auditorium
MARCH 2-5, 1953

GUEST SPEAKERS

J. Lamar Callaway, M.D., Durham, N. C.

Dermatology

A. H. Aaron, M.D., Buffalo, N. Y.

Gastroenterology

Herbert E. Schmitz, M.D., Chicago, Ill.

Gynecology

Carl V. Moore, M.D., St. Louis, Mo.

Hematology

Rudolph H. Kampmeier, M.D., Nashville, Tenn.

Internal Medicine

Henry A. Schroeder, M.D., St. Louis, Mo.

Internal Medicine

Guy L. Odom, M.D., Durham, N. C.

Neurosurgery

Andrew A. Marchetti, M.D., Washington, D. C.

Obstetrics

Harold F. Falls, M.D., Ann Arbor, Mich.

Ophthalmology

J. Vernon Luck, M.D., Los Angeles, Calif.

Orthopedic Surgery

G. Edward Tremble, M.D., Montreal, Can.

Otolaryngology

Arthur P. Stout, M.D., New York, N. Y.

Pathology

Waldo E. Nelson, M.D., Philadelphia, Pa.

Pediatrics

Edward B. D. Neuhauser, M.D., Boston, Mass.

Radiology

George Crile, Jr., M.D., Cleveland, Ohio

Surgery

Robert E. Gross, M.D., Boston, Mass.

Surgery

Charles W. Mayo, M.D., Rochester, Minn.

Surgery

Wyland F. Leadbetter, M.D., Boston, Mass.

Urology

Lectures, symposia, clinicopathologic conferences, round-table luncheons, surgical and medical procedures in color television, medical motion pictures and technical exhibits.

(All-inclusive registration fee—\$20.00)

THE POSTCLINICAL TOUR TO EUROPE BY SHIP AND PLANE—ENGLAND, FRANCE, SWITZERLAND AND ITALY—MARCH 7-31

For information concerning the Assembly meeting and the tour write
Secretary, Room 103, 1430 Tulane Avenue, New Orleans 12, La.

Medical School and the Mayo Foundation will complete the faculty.

* * *

Under the auspices of the University of Minnesota and the Minnesota Cancer Society, a continuation course in *Cancer Detection for General Physicians* will be presented next February 5 to 7, 1953, at the Center for Continuation Study and the University Hospitals Cancer Detection Center. With the thought in mind that "each doctor's office can be a cancer detection center," registrants for the course will spend the major share of their time in the University's Cancer Detection Center, where they will participate directly in the diagnostic activities. Registration will be strictly limited in order that each registrant may obtain maximum benefit.

* * *

The University of Minnesota will present a continuation course in *Recent Advances in Diagnosis for Internists* at the Center for Continuation Study on February 16 to 18, 1953. Although intended primarily for specialists in internal medicine, the program will be of interest to many pediatricians and general physicians. This course will provide information concerning techniques which have been introduced or developed within the past five to ten years which have increased our knowledge of basic physiology and which are becoming or give promise of becoming standard diagnostic procedures. Recent developments in the fields of cardiology, respiratory disease, renal disease, hematology, gastro-enterology, and endocrinology will be emphasized.

Under the direction of Dr. C. J. Watson, Professor and Director of the Department of Medicine, an outstanding guest faculty has been assembled: Dr. Carl V. Moore, Professor, Department of Medicine, Washington University School of Medicine, St. Louis, Missouri; Dr. Thomas E. Machella, Assistant Professor, Department of Medicine, and Associate in Physiology, University of Pennsylvania School of Medicine, and Chief of Gastro-Intestinal Clinic, Hospital of the University of Pennsylvania, Philadelphia; Dr. Robert P. Grant, U. S. Public Health Service Hospital, Baltimore; and Dr. William W. Engstrom, Associate Professor, Department of Medicine, Marquette University School of Medicine, and Director, Metabolism Section, Milwaukee County Hospital. The remainder of the faculty will include clinical and full-time members of the staff of the University of Minnesota Medical School and the Mayo Foundation.

* * *

The University of Minnesota announces a continuation course in *Clinical Dietetics* which will be held at the Center for Continuation Study on March 2 to 4, 1953. During the two-and-a-half day session, recent advances in the field of clinical dietetics will be considered. In addition, a part of the course will deal with some problems in administrative dietetics. The program will be under the direction of Miss Gertrude I. Thomas, Director of Nutrition and Professor of Dietetics.

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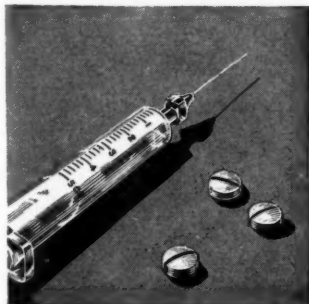
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OPHTHALMOLOGY AND OTOLARYNGOLOGY CONVENTION

The annual spring convention in Ophthalmology and Otolaryngology will be held in Portland, Oregon, March 23 to 27, 1953. The program has been arranged by the Oregon Academy and the University of Oregon Medical School.

The meeting will be divided into two sections. Ophthalmology will be held Monday, Tuesday and Wednesday mornings (March 23, 24, 25) and Otolaryngology will be held Wednesday, Thursday and Friday afternoons (March 25, 26, 27).

Guest speakers will be Dr. Herman Burian, Associate Professor of Ophthalmology, State University of Iowa Medical School, Iowa City; Dr. Harold Scheie, Associate Professor of Ophthalmology, University of Pennsylvania Medical School, Philadelphia; Dr. Kenneth M. Day, Professor of Otolaryngology, University of Pittsburgh Medical School, Pittsburgh; Dr. Jerome A. Hilger, Clinical Assistant Professor of Otolaryngology, University of Minnesota Medical School, Minneapolis. Dr. Burian will deliver the fourth John E. Weeks Memorial Lecture in Ophthalmology.

A table will be available for the display of new instruments. Those wishing to display instruments are requested to notify David D. DeWeese, M.D., Secretary, 1216 S. W. Yamhill Street, Portland 5, Oregon.

INDUSTRIAL HEALTH CONFERENCE

New developments in methods for protecting and improving the health of the American worker and of insuring his safety will be reported by the nation's leading industrial doctors, dentists, nurses and hygienists at the 1953 National Industrial Health Conference to be held in Los Angeles, April 19-24, 1953.

Professional groups participating in the conference will be the American Conference of Government Industrial Hygienists, United States Navy Industrial Health Organization, American Association of Industrial Dentists, American Industrial Hygiene Association, Industrial Medical Association, and the American Association of Industrial Nurses.

This is the first time the six groups have ever scheduled their sessions together on the West Coast. Phenomenal increase in industrial activity in this area, particularly in Southern California, has finally attracted this important national conclave.

George F. Wilkins, M.D., medical director of New England Telephone and Telegraph Company and president-elect of the Industrial Medical Association, says that since employees in all industries and their families constitute the largest segment of the American population, the work of the conference actually concerns the health and economic well-being of the people of the United States as a whole. He believes that industry has no manpower to spare and a key theme that will recur repeatedly throughout this year's meeting will be keeping the industrial worker healthy and on the job.

MINNESOTA MEDICINE



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The methods of treatment used at the Hazelden Foundation are based on a true understanding of the problem of alcoholism. Among the founders of the nonprofit Hazelden Foundation are men who have recovered from alcoholism through the proved program of Alcoholics Anonymous and who know the problems of the alcoholic. All inquiries will be kept confidential.

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CHICAGO MEDICAL SOCIETY

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Of General Interest

Dr. John Briggs, Saint Paul, was made an honorary member of the Sociedad Chilena de Tisiologia following his presentation of a paper before the society in Santiago, Chile, last summer.

* * *

The Air Force Nurse Corps needs 1,000 registered nurses to fill critical vacancies in Air Force Hospitals. Nurses, if accepted, will train at The School of Aviation Medicine at Gunter Air Force Base, Alabama, and will be given an opportunity to specialize in Pediatrics, Operating Room Techniques, Obstetrics, Neuropsychiatrics, and Anesthesia, or may fill the position of a staff nurse, head nurse, preventive medicine nurse, flight nurse or communicable disease nurse.

Second Lieutenants receive over \$300 a month, educational opportunities and veterans benefits. Further information may be obtained by writing to the Chief Nurse Headquarters, First Air Force, Mitchel Air Force Base, New York.

* * *

Air Force Surgeon General Harry G. Armstrong, president of the Association of Military Surgeons, was host to the Surgeon General of the Korean Army and fifty military physicians from twenty nations at the annual association meeting in Washington, November 17 to 19.

Dr. Armstrong, a graduate of the University of South Dakota, interned at St. Luke's Hospital in Saint Paul and practiced in Minneapolis before he joined the air force.

* * *

Dr. A. C. Hilding, Duluth, spoke to the St. Louis County Medical Society on "Wanderings—Medical and Otherwise," at the meeting November 13, held at St. Luke's Hospital in Duluth.

* * *

Dr. Mario Fischer, St. Louis County health officer, was named a member of the community committee to investigate available facilities for housing and caring for mentally ill patients prior to the time their hearings are held in probate court.

* * *

Dr. R. M. Watson, who recently became associated with his father-in-law, Dr. A. I. Arneson, in the clinic at Morris, opened an office in Herman in November and plans to hold regular office hours there every morning.

* * *

Symbolizing another milestone in Minnesota's progress in the care of mentally ill patients with tuberculosis, the Burns Memorial building at Anoka was dedicated November 21, with Dr. J. A. Myers of the University of Minnesota as master of ceremonies.

The building was erected in tribute to Dr. H. A. Burns, who was tuberculosis control officer for state institutions seven years until his death in 1949.

Dr. Ralph Mahowald, Grand Forks, addressed the members of the Sacred Heart Men's Club on cancer, November 18.

* * *

Dr. Norman H. Baker, Fergus Falls, was elected president of the Red River Valley Council of the Boy Scouts of America at the annual Council meeting at Fargo, November 16. Dr. Baker has been active in Scout work for more than nine years and is chairman of the Wilderness Camps land development committee of the Council. Dr. Charles Nelson, of Fergus Falls, was elected an honorary vice president.

* * *

Dr. Al Emond, of Farmington, attended the fractures and surgery course at the Center for Continuation Study at the University of Minnesota, November 13 to 15.

* * *

Dr. Claude R. Hitchcock, director of the Cancer Detection Center at the University of Minnesota, spoke on cancer research in South Saint Paul to a meeting of community members representing social, church and fraternal groups working with the cancer control program of the American Cancer society.

* * *

On the guest faculty of the second annual Regional Postgraduate Courses for Nebraska physicians, November 17 to 22, was Dr. Corrin H. Hodgson, of the Mayo Clinic.

* * *

Dr. D. S. Fleming of the division of tuberculosis, State Department of Health, spoke at the Steele County chest x-ray survey meeting held in Owatonna, November 12.

* * *

Dr. Theodore G. Martens, Rochester, consultant in ophthalmology at the Mayo Clinic, was the principal speaker at the annual dinner meeting of the Minnesota Society for Prevention of Blindness, held at Coffman Memorial Union at the University of Minnesota, November 14.

* * *

Dr. Clyde A. Undine, Minneapolis, attended the regional meeting of the American College of Physicians at Chicago, November 24.

* * *

Dr. Hamline Mattson of Minneapolis addressed the Rice County Medical Society, November 18, at Northfield on "Recurrence Factors in the Surgery of Inguinal Hernia."

* * *

Dr. Moses Barron, Minneapolis, was chairman of the city-wide diabetes detection drive which opened November 17, for a week. The drive was sponsored by the Twin Cities Diabetes Association, the Henne-

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pin County Medical Society, the Minneapolis Health Department and the Twin Cities Retail Druggists Association.

* * *

Dr. G. L. Griebie joined Dr. A. M. Jensen at the Brownston Clinic at Brownston, November 10. Dr. Griebie recently completed twenty-one months of military duty. Before being ordered to military duty he was associated with Dr. J. D. Selmo at Norwood.

* * *

Dr. Stanley R. Maxeiner, Jr., completed his surgical fellowship at Rochester, July 1, and received his Master of Science degree in Surgery. He is now serving with the First Marine Division in Korea.

Dr. Stanley R. Maxeiner, Sr., attended the Western Surgical Association meeting in December, at Houston, Texas, where he presented a paper on "Surgery of Regional Enteritis."

* * *

Speakers at the Minnesota Heart Association Fund Campaign meeting, November 22, were Dr. Lewis Thomas, research professor at the Variety Club Heart Hospital; Dr. Grace M. Roth, president of the Minnesota Heart Association, and Dr. Harold S. Diehl, dean of medical sciences at the University of Minnesota.

The Fund Drive for 1953, to begin in February, is annually sponsored by the Minnesota State Association of Life Underwriters.



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Dr. John Briggs, chief of medicine at Ancker Hospital in Saint Paul and a regent in the American College of Chest Physicians, Dr. Ezra V. Bridge, superintendent of Mineral Springs, and Dr. J. Arthur Meyers, were member of a panel discussing Minnesota's tuberculosis problem and its treatment over WCCO-TV, November 16.

* * *

Dr. Arlie R. Barnes, Mayo Clinic heart specialist, resigned as chairman of the Clinic's Board of Governors in November because of illness. Dr. Hugh R. Butt, head of a section in medicine, was appointed to the unexpired term of Dr. Barnes. Dr. Samuel F. Haines was re-elected vice chairman of the Board and Drs. Mandred W. Comfort and James T. Priestly were reappointed to six-year terms.

* * *

After two years in the Navy Medical Corps, Dr. Wallace R. Anderson returned to his practice with the Austin Clinic. Dr. Anderson received his medical degree from the University of Minnesota in 1946 and did graduate work in pediatrics at the University of Minnesota before he joined the Austin Clinic in 1950.

* * *

Dr. Robert Meyer, Faribault, gave an illustrated talk on cancer to the members of the Faribault Exchange Club at their regular weekly noon-luncheon meeting, November 18.

* * *

Members of the Roseau Lions Club were guests of

Dr. D. O. Berge and Dr. G. S. Wheeler at the reception room of their new clinic, November 13.

* * *

Dr. Reinald G. Johnson, St. Louis Park, was named Hennepin County coroner, November 24. Dr. Johnson has been in private practice for eight years. During World War II, he served in the Philippines with the Army Medical Corps.

* * *

Dr. F. N. Grose, Clarissa, and Mrs. Evelyn Hemming, Long Prairie, county nurse, were guest speakers following a half-day health exhibit in the Clarissa and rural schools. The Health Exhibit, including films, was sponsored by the State Department of Health and the Clarissa Parent Teachers Association.

* * *

Dr. B. J. Cronwell, Austin, Mower County chairman of the 1953 Heart Fund, attended the meeting on ways and means of financing the Heart Association Drive, held at the University of Minnesota, November 22.

* * *

Dr. Ralph K. Ghormley was elected the new president of the Mayo Clinic staff at a staff meeting, November 17. Dr. Thomas J. Dry was elected vice president and Dr. Mark B. Coventry was re-elected secretary. Counselors to the staff named were Drs. L. P. Howett and D. M. Masson.

* * *

Dr. Roger L. Kennedy, president, and Dr. O. J.

MINNESOTA MEDICINE

Campbell, president-elect, Minnesota State Medical Association, were named to the state committee for the Children's Home Society of Minnesota, November 24.

* * *

Mrs. John Hamlon, wife of Dr. John S. Hamlon, State Hospital, Fergus Falls, was a participant in the Pillsbury national baking contest at the Waldorf-Astoria in New York, December 8. She was one of three women in Minnesota eligible for the contest and won a prize of \$1,000 for her cookie recipes.

* * *

A film on Norway, made on his recent trip there, was shown by Dr. S. W. Giere, Benson, November 30, at a meeting of the West Zion Luther League.

* * *

Dr. Norman A. Sterrie, Worthington, stressed the importance of immunization in the public schools over Station KWOA, November 23.

* * *

Dr. W. H. Sutherland sold his medical practice in Benson, November 22, to Dr. Donald Holm of Willmar. Dr. Sutherland is leaving his practice January 1, 1953 to take a six-month course in anesthesiology at the Veterans Hospital at Fort Snelling. Dr. Holm is a graduate of the University of Minnesota School of Medicine and has practiced in Willmar for the past two years.

* * *

Dr. E. E. Hartman, maternal-child health physician, Minneapolis Health Department, was granted a leave of absence January 18, to visit her father in Finland.

* * *

Dr. Dwaine Paal, of Currie, left November 20, for Baltimore, Maryland, to do postgraduate work at Johns Hopkins Hospital.

* * *

Concerning themselves with our increasing aged population, Dr. Robert N. Barr, deputy executive officer, Minnesota Department of Health, and Dr. Helen Knutson, director hospital service in the state, Minnesota Department of Health, spoke to a joint meeting of the County Public Health Nursing Advisory Board and Registered Nurses Club, held November 24 at New Ulm.

* * *

Dr. Robert W. Keyes, Pipestone, plans to practice in his home town as soon as he is released from service with the Army Medical Corps in February. Dr. Keyes was graduated from the University of Minnesota Medical School, interned at Chicago and was in practice at Hastings and Ely before entering the service.

* * *

Dr. Claude J. Ehrenberg, president of the Hennepin County Medical Society, was a member of the panel discussing the need of a new General Hospital at a Minneapolis Town Meeting, November 22.

* * *

One of twenty-three physicians selected to assist the committee on scientific exhibits for the American

JANUARY, 1953

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1. Howard, J. E. Protein Metabolism During Convalescence After Trauma. Arch. Surg. 50:166, 1945.
2. Co Tui, Minutes of the Conference on Metabolism Aspects of Convalescence Including Bone and Wound Healing. Josiah Macy, Jr. Foundation, Fifth Meeting Oct. 8-9, p. 57, 1943.
3. Whipple, G. H. and Madden, S. C. Hemoglobin, Plasma Protein and Cell Protein: Their Interchange and Construction in Emergencies. Medicine 23:215, 1944.
4. Mulholland, J. H., Co Tui, Wright, A. M., Vinci, V., and Shafiroff, B. Protein Metabolism and Bed Sores. Am. Surg. 118:1015, 1943.



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Surgical Technic, Surgical Anatomy and Clinical Surgery, four weeks, starting March 2
Surgical Anatomy and Clinical Surgery, two weeks, starting March 16
Basic Principles in General Surgery, two weeks, starting March 30
Gallbladder Surgery, ten hours, starting April 20
Surgery of Colon and Rectum, one week, starting March 2
General Surgery, one week, starting February 9
General Surgery, two weeks, starting April 20
Fractures and Traumatic Surgery, two weeks, starting March 2
GYNECOLOGY—Intensive Course, two weeks, starting February 16
Vaginal Approach to Pelvic Surgery, one week, starting March 2
OBSTETRICS—Intensive Course, two weeks starting March 2
PEDIATRICS—Intensive Course, two weeks, starting April 6
MEDICINE—Intensive General Course, two weeks, starting May 4
Electrocardiography and Heart Disease, two weeks, starting March 16
Allergy, one month and six months, by appointment
UROLOGY—Intensive Course, two weeks, starting April 13
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Medical Association's 102nd annual meeting in New York, June 1 to 5, 1953, is **Dr. William H. Dearing, Jr.**, of Rochester.

* * *

Dr. Carleton Nelson of the Worthington Clinic, was named a diplomate of the American Board of Surgery in November. Dr. Nelson was graduated from the University of Minnesota and did his post-graduate work in surgery at the University of Minnesota and Minneapolis General Hospitals.

* * *

Among the speakers, sponsored by the Hennepin County Tuberculosis Association during the first week of the 1953 Christmas Seal Campaign, is **Dr. Sumner S. Cohen**, assistant medical director at Glen Lake Sanatorium.

* * *

Dr. Frederick J. Kottke, Minneapolis, was the principal speaker at a meeting of the Cambridge Community Club, held December 2. Dr. Kottke, on the medical staff of the University Hospitals, is the son of Mr. and Mrs. G. G. Kottke of Cambridge. He showed pictures and talked on his recent trip to Europe.

* * *

Governor John S. Battle of Virginia has written the governors of the other forty-seven states asking each of them to invite a seventy-five-year-old physician, a citizen of his state, to attend the first Western Hemisphere Conference of the World Medical Association to be held in Richmond, Virginia, April 23 to 25, 1953. The expense of the trip of the physicians from the states will be borne by the A. H. Robins Company of Richmond, which is celebrating its seventy-fifth anniversary. Travel and other expenses of delegates from the medical societies of the American republics as well as the invited physicians will also be borne by the A. H. Robins Company. Guests will be able to visit historic spots in Virginia including Williamsburg, as well as attend the meeting of the World Medical Association.

* * *

Dr. John W. James has become associated with **Dr. Ellery M. James** in the practice of anatomical and clinical pathology with offices at 657 Lowry Medical Arts Building and laboratory at St. Joseph's Hospital, Saint Paul. Dr. James is a diplomate of the American Board of Pathology.

* * *

While on a recent visit to Santiago, Chile, **Dr. Thomas B. Magath**, chairman of the section of clinical pathology and biochemistry at the Mayo Clinic, was made an honorary member of the medical faculty of the University of Chile, in recognition of his contributions to the field of parasitology.

* * *

Dr. Raymond G. Halvorson, formerly of Duluth, entered surgical practice at Rockford, Illinois, in December after leaving the United States Public Health Service. Dr. Halvorson, a 1945 graduate of Marquette University, Milwaukee, Wisconsin, interned at St. Mary's Hospital in Duluth and joined



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the public health service in 1947 after serving with the United States Navy.

* * *

Dr. Kenneth E. Ahola joined **Dr. Robert T. Kelly** in practice at Nashwauk in November. Dr. Ahola is a graduate of the University of Minnesota Medical School where he was a classmate of Dr. Kelly. Both doctors interned at Minneapolis General Hospital.

* * *

At the annual meeting in November, the Blue Earth Valley Medical Association elected **Dr. Carl Krause**, of Fairmont, president, and **Dr. R. L. Parsons**, of Triumph-Monterey, vice president. **Dr. Herbert Boysen**, of Madelia, was re-elected secretary-treasurer.

* * *

Dr. George Kleifgen, of Park Rapids, resigned as village health officer, November 1.

* * *

Dr. Harvey Basinger was recently elected to the rank of associate in the International College of Surgeons. Dr. Basinger has been a member of the College of Surgeons since 1928.

* * *

Dr. R. J. Lindeman, of Paynesville, entered active military service in January. Dr. Lindeman reported to Gunter Air Force Base in Montgomery, Alabama, January 1.

* * *

Dr. Richard Jesse began medical practice in Truman in December. Dr. Jesse, who was recently dis-

charged from the Army Medical Corps and will use the office and equipment of **Dr. M. J. Lester** until Dr. Lester is released from the Navy.

* * *

Dr. M. G. Fredricks, Duluth, was elected president of the Minnesota Dermatological Society at the annual meeting held November 26 at Ancker Hospital in Saint Paul. Dr. Fredricks is a staff member of the Duluth Clinic.

* * *

Dr. J. S. Blumenthal addressed the Ralph Pohl Post of the American Legion and Auxiliary on December 4, and gave his impressions of his recent trip to Europe.

* * *

Mayo Clinic staff members participating in the American Medical Association clinical session December 4, in Denver, Colorado, were: **Drs. E. V. Allen, C. F. Gastineau, F. J. Heck, R. L. Kennedy, L. C. Kolb, W. F. Kvale, G. B. Logan, A. M. Olsen, H. F. Polley, L. E. Prickman, T. W. Mears** and **H. J. Moersch**.

* * *

Among Minnesota's campaign leaders who heard Basil O'Connor of New York, president of the National Foundation for Infantile Paralysis, present cost statistics on polio care, December 5, in Saint Paul, were **Dr. Willis E. Dugan** of Minneapolis, chairman of the Minnesota March of Dimes, and **Dr. Walter Ramsey**, of Saint Paul, chairman of the Ramsey County chapter of the Foundation.

OF GENERAL INTEREST

Dr. Robert Holmen, Saint Paul, spoke at the meeting of the Brotherhood of the Bethel Lutheran Church, December 5, at Willmar. Dr. Holman is a member of the Board of Charities of the Minnesota Conference of the Augustana Synod and has compiled, as a personal hobby, a history of all Lutheran bodies and synods in this country. He talked on his work of collecting and writing church history.

* * *

Dr. John D. McCarthy, resident pathologist at the University Hospitals, University of Minnesota, recently became engaged to Gladys Lucille Johnson, a senior nursing student at the University of Minnesota.

* * *

Dr. Milton Plucker, a graduate of Nebraska University, joined Dr. M. I. Hauge on the Clarkfield Clinic staff, Clarkfield, December 20.

* * *

Mayo Clinic staff members to attend the Western Surgical Association meeting, held at Houston,

Texas, December 4 to 6, were Drs. J. L. Bollman, V. S. Counseller, R. K. Ghormley, J. H. Grindlay, E. S. Judd, C. W. Mayo, and H. Waltman Walters.

* * *

Dr. O. G. McDonald, member of the Duluth Clinic, was the principal speaker at the annual meeting of the Gogebic County (Michigan) Medical Society, December 2. Dr. McDonald spoke on, "Diseases of the Stomach—With Special Reference to the Ulcer Problem."

* * *

Minnesota chapters of the National Foundation for Infantile Paralysis will be in debt a total of \$750,000 because of the 1952 epidemic. Dr. Willis E. Dugan, state chairman of the March of Dimes campaign, pointed out this fact in a talk before Ramsey County workers to discuss the financial situation, December 5.

* * *

Dr. J. A. Cosgriff, Sr., of Olivia, attended the American Medical Association meeting, held at Denver, Colorado, the week of December 8.

* * *

Dr. Philip S. Hench, of Rochester, attended the dedication of a public park in Havana, honoring the famed yellow fever workers—Drs. Walter Reed, Jesse Lazear and their associates—December 3. The park is located on the spot where Dr. Reed directed his experiments that led to the wiping out of yellow fever. Dr. Hench has done considerable research, beginning in 1939, on the real location of the yellow fever camp site in Cuba.

* * *

Dr. and Mrs. Earl Lowe, of South Saint Paul, returned recently from a two months' sojourn in Colorado Springs, Colorado. Dr. Lowe, who has been ill, has now resumed his practice.

* * *

Drs. Theodore Greenfield, and H. E. Gaustad of Cokato and Dr. Gordon Watson of Minneapolis returned December 2 from a vacation trip on which they served as members of a crew of six, sailing a boat in the region of the Bahama Islands, southeast of Florida.

* * *

Dr. Carleton Chapman, Associate Professor of Medicine, University of Minnesota, spoke at a pathological conference on heart disease, held at Redwood Falls in November for the medical staff of the Redwood Falls Municipal Hospital.

* * *

Dr. L. F. Van Veen joined Drs. L. M. Evans and R. J. Cesnik in their practice at Sauk Rapids, in December.



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Dr. Wallace Anderson, of Lakeville, held an immunization clinic at the Lakeville High School, December 10.

* * *

Dr. A. V. Stoesser, department of pediatrics, and Dr. Norman Nelson, department of internal medicine, University of Minnesota, presented the scientific program at the meeting of the Southwestern District Medical Society, December 6, held at Dickinson, North Dakota.

Dr. Stoesser spoke on, "Differential Diagnosis and Treatment of Respiratory Diseases in Children," and Dr. Nelson on, "Psychosomatic Medicine."

BLUE SHIELD NEWS

Among the benefit increases added to the Minnesota Blue Shield contract effective last October 1 was that of consultation. Since consultation with another physician is frequently an advantage to a seriously ill patient, this service as customarily used in medical practice was added to those already provided by the contract.

However, the possibility of abuse of the consultation privilege and the potential excessive cost, as previously experienced by one plan at least, required that certain safeguards regarding it also be placed in the contract. It was for these reasons consultation was limited to one service per subscriber per contract year at a cost of \$10 per consultation. In addition, to assure that

only serious conditions or vitally important issues constitute justifiable reason for consultation the words "bona fide and urgent need" were inserted in the consultation definition. And only to control any tendency to abuse the consultation privilege, the clause "the final determination of such need, however, to be made by Minnesota Medical Service, Inc.," were inserted in the contract.

It is of interest now, that during the first month of the operation of this contract provision, it is not clearly understood by physicians. This is evident from the receipt of three different types of ineligible consultation claims. One type clearly was not intended to be included as a consultation service and the other two types represent abuses, even though unintentional, for which safeguards were inserted in the contract.

First of these consists of daily attendance of the subscribers by a specialist other than the surgeon for the whole postoperative period when no serious medical complication is involved. Such claims are being received, are marked "Consultation," and specify that the medical specialist was called in to see the patient by the surgeon. In such cases, when another condition warrants it, a consultation fee is paid, or if serious medical complications are involved, routine in-hospital medical care fees are paid as provided by the contract.

In the second group are found those claims of doctors associated in practice calling in one another to see a case in the office or hospital when no serious hazard to the subscriber is involved. For instance, one part-

OF GENERAL INTEREST

ner called the other one in for an opinion about a submucous resection while the patient was at the office and the condition involved was a chronic one without the need for immediate surgery. Other similar consultations have involved chronic or recurrent non-hazardous conditions involving patients in the hospital.

And the third type of ineligible consultation is one in the home or office when a rather common condition is involved. Among the best examples of this is a home call to see an ambulatory patient about a common-place gynecologic complaint. Neither the condition nor other circumstances involved fulfill the conditions regarding consultation services stipulated in the contract.

It is apparent from these facts that not only the purpose of adding consultation services to those previously provided, but also the limiting provisions and their reasons may not have been clearly understood by all members of the profession. Used properly consultation is of marked benefit to the subscriber as well as of both professional and financial advantage to the attending physician. Only by avoidance of abuses of the consultation privilege will it be possible in the future to increase the number of consultations per year at the fee for consultation. It is hoped that continuing

experience with consultation services will warrant these increases in the future.

Blue Shield payment for surgical-medical care of Minnesota Medical Service, Incorporated, participant subscribers:

For 12 months of 1951.....\$3,095,213.00
For 10 months of 1952..... 3,070,475.00

Blue Cross payment for hospital care of Minnesota Hospital Service Association participant subscribers:

For 12 months of 1951.....\$11,312,390.00
For 10 months of 1952..... 10,426,444.00

* * *

The National Fund for Medical Education, with offices in New York, is launching a five million dollar industry-wide solicitation campaign in support of medical education in the United States.

Colby M. Chester, newly-appointed chairman of the fund's Committee of American Industry, will direct a nationwide organization to mobilize business concerns behind the nation's hard-pressed medical schools. Mr. Chester is honorary chairman of the board of General Foods Corporation.

The National Fund for Medical Education is a lay organization which is working in conjunction with the American Medical Education Foundation, founded by the American Medical Association two years ago. The AMEF's goal for 1953 is included in the amount.

The National Fund's Committee of American Industry, which will spearhead the campaign, will be composed of 100 ranking business leaders from every segment of industry. Their task will be to educate industry as to the critical needs of the medical schools. The committee contemplates solicitation of 25,000 American business concerns during 1953. Mr. Chester plans to appoint a vice-chairman, an advisory council, and division chairmen, who will direct the activities of more than fifty industrial committees. E. J. Ade, New York, has been appointed fund-raising director for the campaign.

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BOOK REVIEWS

BOOK REVIEWS

Books listed here become the property of the Ramsey, Hennepin and St. Louis County Medical Libraries when reviewed. Members, however, are urged to write reviews of any or every recent book which may be of interest to physicians.

BOOKS RECEIVED FOR REVIEW

TEXTBOOK OF SURGERY. H. F. Moseley, M.A., D.M., M.Ch.(Oxon), F.A.C.S., F.R.C.S. (Eng.), F.R.C.S. (C.). Assistant Professor of Surgery, McGill University; Associate Surgeon, Royal Victoria Hospital, Montreal, Canada. Foreword by G. Gavin Miller, M.D., C.M., M.Sc., F.R.C.S. (C), F.A.C.S., Chairman of the Surgical Department, McGill University; Surgeon-in-Chief, Royal Victoria Hospital, Montreal, Canada. 896 pages. Illus. Price \$15.00, cloth. St. Louis: C. V. Mosby Co., 1952.

THE LITERATURE OF STREPTOMYCIN, 1944-1952. Selman A. Waksman. 553 pages. Price \$5.00, cloth. New Brunswick, N. J.: Rutgers University Press, 1952.

DERMATOLOGY. Essentials of Diagnosis and Treatment. Marion B. Sulzberger, M.D. Professor and Chairman, Department of Dermatology and Syphilology, New York University Post-Graduate Medical School; Director of Dermatology and Syphilology, Skin and Cancer Unit and University Hospital, New York University-Bellevue Medical Center; Captain (MC) USNR., and Consultant Dermatologist to the Bureau of Medicine and Surgery, U. S. Navy; and Jack Wolf, M.D., Associate Professor of Clinical Dermatology and Syphilology, New York University Post-Graduate Medical School; Attending Dermatologist and Syphilologist, Skin and Cancer Unit and University Hospital, New York University-Bellevue Medical Center. 592 pages. Illus. Price \$10.00, cloth. Chicago: Year Book Publishers, 1952.

SURGERY OF THE CHEST. By Julian Johnson, M.D., D.Sc.(Med.), Professor of Surgery, School of Medicine and Graduate School of Medicine, University of Pennsylvania, and Charles K. Kirby, M.D., Assistant Professor of Surgery, School of Medicine, University of Pennsylvania. Illustrations by Edna Hill. (Handbook of Operative Surgery). 387 pages. Price \$9.00. Chicago: The Year Book Publishers, Inc., 1952.

The authors state in the preface, "Our objective, both in the text and in the illustrations, has been to present the step-by-step details of operative technic in as clear a manner as possible." This objective has been admirably achieved. The text is brief, incisive, and related largely to the explanation of well-executed line drawings, which convey most of the information in this book.

The first chapter deals briefly with surgical physiology of the thorax, diagnostic studies in thoracic surgical patients, pulmonary function tests, and pre-operative preparation. The second chapter deals with the manage-

ment of chest injuries. Chapters 3 to 9 cover the various aspects of pulmonary surgery. The presentation of the pulmonary surgical anatomy is especially excellent. There is a chapter on surgery of the esophagus, one on surgery of heart and great vessels, and one devoted to surgery of pulmonary tuberculosis. The chapter on surgery of pulmonary tuberculosis is necessarily incomplete and contains a number of procedures that are now seldom done in many chest centers around the country. The final chapter is devoted to the repair of diaphragmatic hernias, the operative correction of pectus excavatum, and the excision of mediastinal tumors.

This book contains a lot of useful information presented in a clear-cut way and is well worth reading by both the thoracic specialist and the general surgeon who is faced with some thoracic surgical problem.

LYLE A. TONGEN, M.D.

SCHOOLS OF NURSING IN THE UNITED STATES. Published by Committee on Careers in Nursing, National League for Nursing, 2 Park Avenue, New York 16, New York.

Published for the information of the prospective nurse, this pamphlet contains a list of training schools

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BOOK REVIEWS

for nurses and informative material of value to the young woman contemplating a career in nursing. Quantity prices: up to 100 copies, 5 cents each; 100 copies, \$4.50; 500 copies, \$21.75.

DIABETES GUIDE BOOK FOR PHYSICIANS.
New York: The American Diabetes Association, Inc., 1952.

Figuring the optimum diet for a diabetic and furnishing him with easily understandable instructions as to his diet is not a simple matter for the physician. Often the services of a hospital dietitian seem almost essential.

This little booklet, however, put out by the American Diabetes Association, is primarily for use of the physician who has to figure out individual diets for his diabetic patients and instruct them as to their diets, without the aid of a dietitian. The booklet provides the simplest solution, that we know of, to this rather difficult job. We like it particularly because it provides lists of food exchanges and thus provides a great variety in the diet. We also like it because the sample diets contain substantial amounts of carbohydrate, a normal amount of protein and an amount of fat only slightly above that in a normal diet. The foods listed are all those contained in a normal diet and none is a special diabetic food.

By giving a copy of the booklet to the patient, the need of typewritten food lists is obviated. The booklet, however, is not complete enough to provide full instruction to the diabetic about his disease.

Copies of the Diabetes Guide Book may be obtained by physicians from the office of the American Diabetes Association, Inc., 11 West 42nd Street, New York 18, New York.

Incidentally, the American Diabetes Association publishes a bimonthly journal entitled *Diabetes* for the profession and a bimonthly publication entitled *Forecast* for the diabetic patient, both of which are very much worth while.

C.B.D.

DERMATITIS FROM INDUSTRIAL OILS AND CHROMATES

(Continued from Page 56)

of personal cleanliness, had folliculitis of the nape and dorsums of the hands and arms where he was exposed to oils and dirt while cleaning engines. This might have been avoided by personal care, but his shirts were rarely laundered, and his habit of wearing a greasy handkerchief around his neck contributed to the folliculitis. The last report showed healing of the areas, and I think we have taught him how to keep clean. The *second* and *third* cases are those of exposure to Nalco, a substance used in preventing corrosion in Diesels. It is composed of 72 per cent sodium chromate, 16 per cent sodium tetraborate, and sodium nitrate 12 per cent. Although only 0.6 oz. per gallon of water is used, a person allergic to the substance would have a violent reaction. The second and third patients were exposed to this substance in line of duty, and had repeated attacks of eczematous dermatitis (as opposed to the follicular dermatitis seen from oils). I applied patch tests to the forearm using 0.5 per cent Nalco and found strongly positive reactions in fourteen hours. Reactions to 0.5 per cent sodium chromate were also positive. Reactions to the other ingredients of Nalco were negative. Control tests were negative. The second patient had repeated attacks of eczema though he was not re-exposed to Nalco, but the patches of dermatitis were seen at the site of contact with chromium plated metal fasteners, eyelets on shoes, snaps on underwear, or at the site of contact with leather. The third patient changed occupations and had no recurrence. These two patients present clearcut cases of contact dermatitis to a specific chemical, in this instance sodium chromate, found in a special location in the railroad industry.



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